THE MAGAZINE OF

Standards

. . . the magic crystal — page 161

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Our Cover

Photo Illustration By Nick Lazarnick for Bell Telephone Lab.

Synthetically produced inside a bomb-like "test tube," this quartz crystal is identical in every way to quartz crystals produced by nature. Both the real and synthetic product are piezoelectric —they can convert mechanical energy to electrical energy.

National and international work on standard tests and specifications for quartz crystals is described in this issue (see page 161).

ASA

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FEATURES

The Magic Crystal. *By R. A. Sykes* 161
International work on quartz crystals for oscillator control, based on American standards, nears completion. Now work is expected on crystals for high-frequency filters, important in radio because of limited frequency spectrum and increasing demands for service.

American Ladder Institute Members Find Standards a Must! 163
Why the Institute's members urge ladder users to follow American Standard Safety Code.

Standards to Aid Sonar. *By W. J. Trott* 166
Methods of calibrating transducers, the electroacoustic device that makes sonar possible, are now American Standard.

How Companies Use Standards—ASA Members Exchange Ideas 168
The spring meeting of ASA's Company Member Conference considered company standards programs, technical problems of screw threads, electroplating, color control, simplification, use of standards in the cost-price squeeze, and use of specials.

Dimensional Standards for Bushings—An Accomplishment 175
Electrical World *editorial tells why the electrical industry is pleased with American Standard C76.1a-1958.*

COLUMNS

Standards Outlook. *By Leo B. Moore* 181
DINNSA (Does Industry Need a National Standards Agency?) *By Cyril Ainsworth* 187

NEWS

News Briefs 179
What's New on American Standards Projects 185

DEPARTMENTS

What Is Your Question? 176
New Books 176
Through History With Standards 177
From Other Countries (List of Standards) 178
American Standards Under Way. (Status as of May 19, 1958) 183
Published Standards Now Available 184

. . . . marginal notes

The Company Member Conference has chosen Kansas City, Missouri, as the place for its Spring Meeting next year, to be held May 6 and 7, 1959. The Company Member Conference consists of standards engineers and executives who represent companies that are members of the American Standards Association. Twice a year they meet to exchange ideas and experiences on development and use of standards.

The Conference will hold its annual meeting in New York this year during the National Conference on Standards, November 18-20.

For a report of the papers presented at CMC's 1958 Spring Meeting, see page 168.

All the sessions offered information of real value to the company representatives and were followed by lively question and answer discussions. However, one of the most important and appreciated events of this meeting cannot be reported in THE MAGAZINE OF STANDARDS. This was the session devoted to workshops. Three workshop meetings were held, one on the newly developed interference - fit screw thread; one on standard thicknesses of electroplate on steel parts, and one on standards for controlling color of paint finishes. CMC members fired questions at the experts who had presented papers on these subjects earlier in the meeting. They received off-the-cuff and in many cases off-the-record answers.

All company members of the American Standards Association are invited to name representatives to the Company Member Conference and take part in the CMC meetings.

• Companies can now cut their costs when buying American Standards. A new system of coupon books (see back cover ad) will reduce the number of checks they write. The service has been started as the result of requests from a number of ASA's Members.

Ninth National Conference on Standards

Hotel Roosevelt, New York
November 18, 19, 20, 1958

This Month's Standards Personality

AXEL G. JENSEN, dynamic personality and world-wide figure in radio, television, and acoustics research, spares some of his boundless energy for work on standards. Mr Jensen heads all visual and acoustical research at the Bell Telephone Laboratories. In standards, he helps make the policy under which the American Standards Association operates, as a member of ASA's Board of Directors (nominated by the Society of Motion Picture and Television Engineers), and he helps make final decisions on approval of American Standards, as an alternate member of ASA's Standards Council (representing the Institute of Radio Engineers). His breadth of interest in standards gives him membership on three of ASA's standards boards—Electrical, Photographic, and Acoustical, as well as on the U.S. National Committee of the International Electrotechnical Commission. At the technical level, he is an active member of the sectional committees on Definitions of Electrical Terms, C42, on Motion Pictures, PH22, and for a number of years served as chairman of C16, Radio.

Speaking several languages fluently, and a frequent traveler, Mr Jensen has friends throughout the world. Most recently, he visited Moscow as a U.S. delegate to Study Group 11 on Television of the International Radio Consultative Committee (CCIR). He was international chairman of the International Organization for Standardization's Technical Committee 36 on Cinematography at its 1956 meeting at Stockholm, and has been American delegate at several meetings of IEC's Technical Committee 12 on Radio Communication. Last year he was one of four members of the Institute of Radio Engineers to attend a meeting of the Popov Society, Russian equivalent of IRE.

Mr Jensen is a native of Copenhagen, Denmark, and was graduated from the Royal Technical College there with a degree in electrical engineering. He came to America to do post-graduate work at Columbia University. In 1922 he joined the engineering department of Western Electric Company. This department is now the Bell Telephone Laboratories. Here he started his study of radio receiving and design of field strength measuring sets. This took him to London in 1926 where he spent five years in charge of the test station during development of transatlantic short wave service. Then, back to the United States to work on the coaxial cable system, he naturally moved into the new field of television as it developed. As early as 1938 he was working on television research, and in 1952 became director of this research at the Laboratories.

Mr Jensen holds a number of patents, including one on the cathode-ray tube television spot receiver for motion pictures. In addition to Fellowships in IRE, SMPTE, and the Television Society of London, his contributions to the development of television have won him the G. A. Hagemann Gold Medal for Industrial Research from the Royal Technical College in Copenhagen, and the David Sarnoff Gold Medal from SMPTE. He is now SMPTE Engineering Vice-President, and has served as chairman of the IRE Television Systems Committee and of its Standards Committee, as well as an IRE Director.

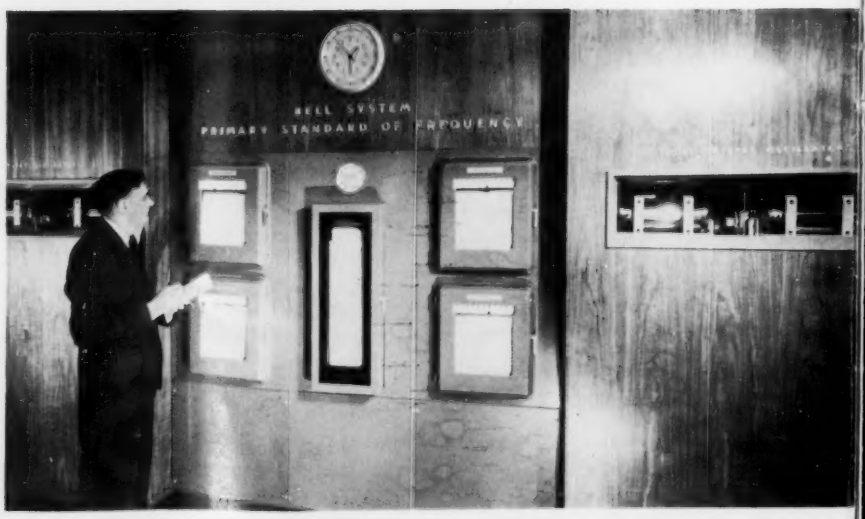
When he has spare time, he says, Mr Jensen spends it mostly "puttering around the house repairing furniture and occasionally making it." He also loves to play poker.

SAMPLES OF QUARTZ CRYSTALS grown by scientists at Bell Telephone Laboratories. The photograph shows four years of progress. The crystal on the right weighs 312 grams and was grown at the Laboratories in 32 days.

All photos through the courtesy of the Bell Telephone Laboratories

TOP VIEW of a steel bomb in which Bell Laboratories grows quartz synthetically. Finely powdered silica is placed in the bottom of the bomb and an aqueous solution is added. The seed plate, a thin slice of quartz, is suspended at the top of the bomb. The bomb is sealed and subjected to pressures exceeding 15,000 psi and temperatures of 750 F. The silica dissolves, rises, and is deposited on the seed plate.

QUARTZ CRYSTALS keep this "master timekeeper" so precise it will not vary more than one second in 30 years. The crystals vibrate constantly at a frequency of 100,000 cycles per second. Two units are visible at the extreme left and the other two at the extreme right.



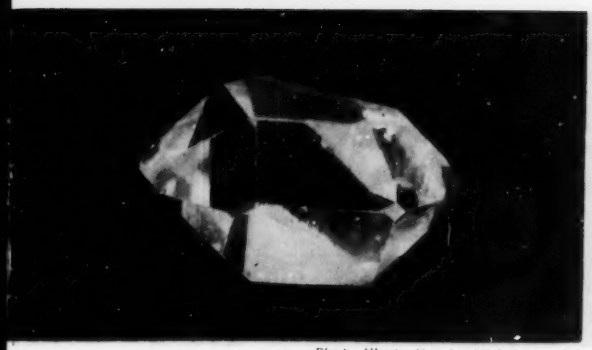


Photo Illustration by Nick Lazarnick

The Magic Crystal

by **R. A. Sykes**

THE DEVELOPMENT of quartz crystal units for frequency control has had a history considerably different from that of any other of the common components used in electronic equipment, such as resistors, capacitors, and vacuum tubes. This has been due principally to the complexity of this particular component.

It is complex because, being an electromechanical resonator, it has had to receive the attention of both the electrical engineer and the physicist.

The volume of crystal units used in electronic equipment up until the 1940's was considerably restricted, and hence received little attention from the scientists. Prior to and during the 1930's, it first found its use in radio broadcasting systems to stabilize the frequency of radio broadcasting and short wave transmitters. In the decade between 1930 and 1940, considerable progress was made in the technology of quartz crystal units for use in selective filters in telephone transmission systems. These units were of a highly specialized nature and not generally applicable to radio transmission problems, because telephone carrier system requirements were centered in the frequency range 10 kilocycles to 500 kilocycles.

It was not until the war years, 1940 to 1950, that the technology of producing crystal units for military communication equipment was recognized as of the greatest importance. With the heavy demand to meet military requirements, a concerted effort was made in the early 1940's to seek new methods and theories to improve the then existing quartz crystal units. Progress during this period was rapid, and considerable use of the science and technology of the telephone carrier job was used to make this advance. Since the military was the largest customer for procurement, it was necessary to rapidly formulate specifications for crystal units for the various military communication equipments. During the formulation of these specifications, many contributions were made by the various industrial laboratories to assist in obtaining proper and realistic specifications for procurement. Also, during this period, a committee was set up in the Radio Manufacturers Association (RMA) to assist in this guidance. Contributions were also made by such scientific societies as the Institute of Radio Engineers (IRE).

By 1950, as a result of the participation of these various committees and individuals together with the Armed Services, standard values and dimensions and methods of measurement had been established for quartz crystal units used in this country. Since 1950, the Radio-Electronics Television Manufacturers Association (RETMA),[1] and the IRE Committee on Piezoelectric and Ferroelectric Crystals has been active in attempting to standardize within U. S. industry a number of the essential details that had previously been bothersome in establishing the military standards. Complete interchange of ideas and agreements have been made between these two committees and the military standards agency. Some significant contributions have been made as a result of this.

The activity of the International Electrotechnical Commission (IEC) on the standardization of crystal units for oscillators was initiated in 1954 at the Golden Jubilee in Philadelphia. Progress within this international group has been especially rapid due to two basic reasons. The first is that by far the largest consumer of crystal units world-wide has been the U. S. Armed Services. In addition, much of the fundamental knowledge and technology of production was initiated in this country to meet the military demand during World War II and the

[1]Now the Electronic Industries Association (EIA).

Korean War. Since other countries were active during the war years supplying crystal units for American military equipment, it was obvious that the international standards should be initiated with the American standards used as a basis from which to operate. In addition, the recent activities within the NATO organization to standardize military equipment and components has naturally led to those principally of the American system.

The continuing activity in standardization on quartz crystal units for oscillators being performed by IEC Committee 40-3 will have many beneficial effects on U. S. industry and particularly on the Department of Defense requirements. It is very probable that the IEC recommendations will receive very nearly complete support of U. S. industry since they contain a large measure of the standards used in USA.

In addition, there have been many important contributions made by the other member countries which go even farther than some of our present industrial standards, and it is expected that U. S. industry will benefit considerably from this broadened viewpoint. The U. S. representatives to the NATO organization for standardization in that area are drawing heavily upon the results of the IEC group, and it is expected that their benefits will also be considerable. Since the initial IEC documents that were submitted for approval under the six months' rule[2] are more complete than those of the present EIA standards, their acceptance by U. S. industry is almost assured.

Some of the future work that is planned by the TC 40-3 subcommittee will go into more exact specifications of quartz crystal units not only for oscillator control but very probably for high-frequency filters. It is these applications to high-frequency crystal filters that will play a more and more important part in the future of radio communication systems. This is of particular significance because of the limited frequency spectrum available and the increasing demands for service.

The U. S. National Committee of the International Electrotechnical Commission (IEC), Subcommittee 40-3 on Quartz Crystals, has had a large measure of success in obtaining agreement internationally with standards that have been formulated in this country by the technical and engineering societies and the military departments. In a relatively short period of time, after only 2½ years of work, international agreement has been obtained on a group specification for quartz crystals for oscillators. This specification includes most of the standard values, dimensions, measuring and test methods initiated by the EIA Committee SQ-1, those initiated by the IRE Technical Committee on Piezoelectric and Ferroelectric Crystals, 14, and the military standards on quartz crystal units. The part of the group specification containing these has survived the six-months' rule. The IRE method of measuring crystal unit parameters was accepted in committee at the last meeting in Zurich. At this meeting it was also agreed to prepare article sheets that include most of the important present military standard crystal units.

The U. S. National Committee has at present the following membership:

R. R. Bigler, Radio Corporation of America
C. B. Gardner, Signal Equipment Support Agency, Fort Monmouth, N. J.
E. A. Gerber, U. S. Army Signal Engineering Laboratory, Fort Monmouth, N. J.
R. B. McDowell, Navy Department, Bureau of Ships
E. L. Minnich, Western Electric Company
R. A. Sykes, Bell Telephone Laboratories

The above members hold one or more positions in the following committees:

EIA Committee, SQ-1 on Piezoelectric Crystals
IRE Committee, 14, Piezoelectric and Ferroelectric Crystals
NATO Committee on Crystal Unit Standardization
Department of Defense Committee, Advisory Group on Electronic Parts (Frequency Control Devices)

Because of their positions on these various committees, they are able to formulate a combined American viewpoint for action by the chief U. S. delegate to the annual IEC committee meetings. R. A. Sykes was the chief delegate to the London meeting in 1955 and the Munich meeting in 1956; Dr E. A. Gerber was the chief delegate to the Zurich meeting in 1957.

The U. S. delegates, with their knowledge of activities in the various industrial and scientific committees, have been able to maintain an important lead in determining the international specifications, and it is expected that this will be continued in the future.

[2]This is the procedure under which draft recommendations proposed for adoption by IEC are circulated to the IEC member-bodies.

ABOUT THE AUTHOR

Mr Sykes is apparatus development engineer concerned with piezoelectric and ferroelectric crystal units, solid delay lines, and sealed terminals in the Research Department of the Bell Telephone Laboratories. He has been with the Laboratories since 1930. He is a member of the Technical Advisory Panel on Electronics (Frequency Control Devices Group); and of the Institute of Radio Engineers Committee on Piezoelectric Crystals. He is also a member of the Electronic Industries Association's SQ-1 Committee on Crystals and of Subcommittee 3 on Crystals of the International Electrotechnical Commission's Technical Committee 40. Mr Sykes is a Fellow of the IRE.

AMERICAN LADDER INSTITUTE MEMBERS *FIND STANDARDS A MUST!*

"The best safety interests of the users of ladders are also the best selfish interests of the quality-minded wooden ladder manufacturers," says J. K. Halderman, president of the American Ladder Institute. This organization, with national offices in Chicago, represents 80 percent of the wood ladders made in this country, though counting among its members less than half of the total number of firms that are engaged in the manufacture of ladders.

In existence for more than 40 years, and recognizing early the need for basic standards to which all ladders should be built to assure reasonable safety, this group originally adopted a simple outline of requirements for each ladder to meet in order that it might give the expected service for which it was designed. A ladder is such a commonplace item and its use so obvious that few people attempt to learn safe practices for its use, care, and handling. It was with these thoughts in mind that the American Ladder Institute offered assistance to the American Standards Association in an effort to develop a safety code of construction consistent with standard sizes of lumber and in conformity with tested and proved practice.

A sectional committee was formed in 1923 and the tentative American Standard Safety Code A14 for Construction, Care, and Use of Ladders was developed and approved on July 25 of that year. Representatives of labor, producing and using industries, state and Federal Government, insurance companies, and independent experts comprise the sectional committee. Standards for ladder construction they have developed together have been accepted as approved specifications by the American Ladder Institute, American Society of Safety Engineers, Underwriters' Laboratories, and numerous insurance firms through their affiliation with the National Association of Mutual Casualty Companies.

Experience gained in the manufacture and use of ladders in accordance with this original code led to a revision and approval in 1935. Further revisions were determined necessary in 1939, but work was suspended during World War II. However, revisions were made in 1948. In 1950, administrative sponsorship of the sectional committee was taken over by the National Association of Mutual Casualty Companies, under whose leadership the committee was re-activated. In 1952, the American Ladder Institute was named as a cooperating sponsor and further revisions were made.

Well over a thousand years of ladder manufacturing are represented in the history of members of the American Ladder Institute. Several individual members are firms which have been engaged in the making of ladders for more than 100 years. With this background, experience indicated that further revision in the code was desired. An Institute study determined that some specifications in the existing code were lighter than minimum safety should provide, while others resulted in the supplying of ladders much heavier than necessary. To substantiate these findings, the American Ladder Institute at its own expense arranged for exhaustive tests which were made by the Timber Engineering Company's laboratories at Washington, D.C. A total of 53 different ladders were tested to evaluate the design and minimum component sizes with compression loads applied in every conceivable manner.

Stability tests were also conducted and ladders were tested to failure.

The results of these tests were used as the basis for recommended changes culminating in the current revision submitted by the subcommittee to the larger sectional committee for ballot. Its acceptance is under consideration at the present time. If adopted, it is hoped that this new set of standards will be ready for publication next fall.

With the theme, "There's a Right Ladder for Every Job," it is the desire of the American Ladder Institute to acquaint users with the various types of ladders manufactured, not just by its members, but by the entire ladder industry. Just as a person should not expect to drive a spike with a tack hammer, neither should a household type of step ladder be used by a 200-lb man for a factory job. Obviously, a 6-ft step ladder required in a mill room to support two men working with heavy

tools needs to be substantially stronger and heavier than a ladder of the same size intended for home use. In one instance, both the front and back of the ladder are used to support workers, both of whom might exceed 200 lb in weight, whereas a housewife weighing 115 lb would hardly want to use such a ladder in reaching a cupboard shelf or in washing windows.

The service a ladder is expected to perform should regulate the kind of ladder to be purchased. In the past, purchasing agents, whose responsibility calls for buying at the best price, have not been instructed upon receiving requisitions for ladders as to the manner in which the ladders are to be used. They could hardly be blamed for buying the wrong kind of ladder. Ordinarily, the dealer or his clerk upon selling a ladder will inquire as to the use, but often a person will say only, "I want a 5-ft step ladder." If a customer does not explain his need, the dealer can hardly be criticized for supplying a household-type ladder. If a dealer knows that a ladder is to be used by a contractor or an industry, the proper ladder can be recommended, but price alone is not the best gage to use in the purchase of a ladder.

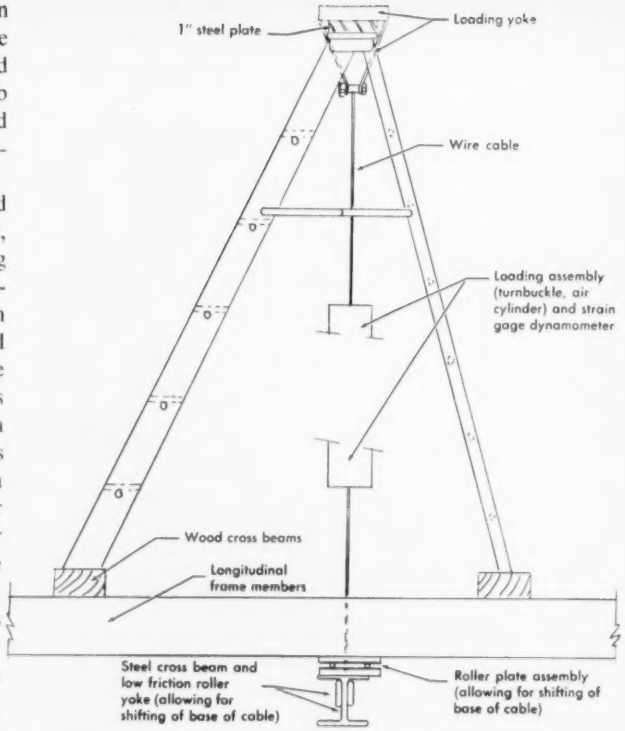
By establishing three different types of step ladders and defining their use in the American Standard Safety Code for Wood Ladders, some of this confusion can be eliminated.

Type I is 4 to 20 feet for heavy duty, such as their use by utilities, contractors, and in industry.

Type II is 4 to 12 feet for medium duty, such as their use by painters, in offices, and for light industrial use.

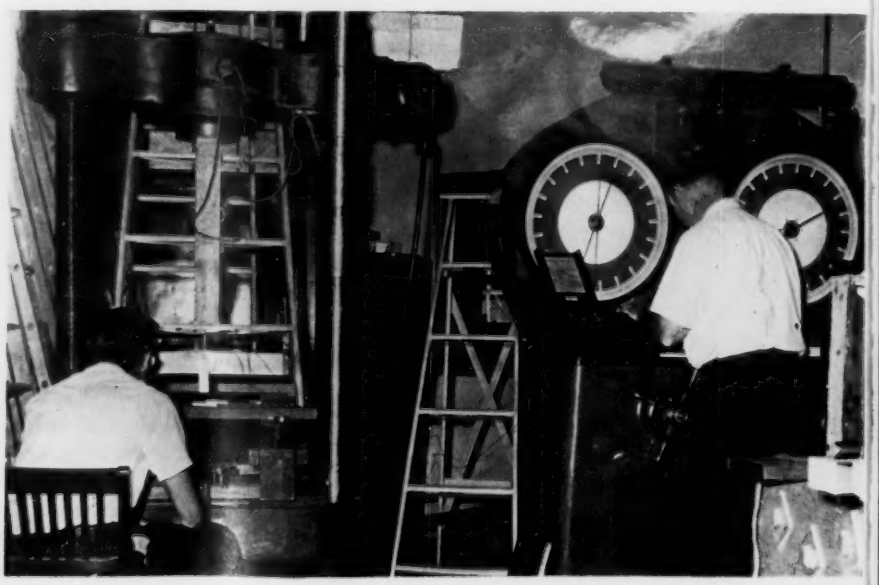
Type III is 3 to 6 feet for light duty, such as light household use.

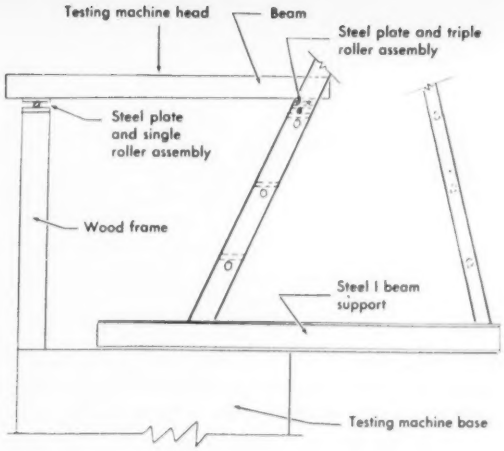
Proper use is important, for no matter how strong or how perfect a ladder may be, it can still be a hazard if


1" steel plate
Loading yoke
Wire cable
Loading assembly (turnbuckle, air cylinder) and strain gage dynamometer
Wood cross beams
Longitudinal frame members
Steel cross beam and low friction roller yoke (allowing for shifting of base of cable)
Roller plate assembly (allowing for shifting of base of cable)

Method used for scientific loading of 12-ft step ladder by applying pressure at the top. Load was developed by means of an air cylinder attached to a wire rope, turnbuckle, and strain gage dynamometer.

Assembly for applying compression loads to center four inches of bottom step of step ladder using testing machine. Deflection of the step was measured at the center of the step length with a dial micrometer.





Beam and roller assembly for applying compression loads to middle steps of 6-ft and 10-ft ladders as developed by Timber Engineering Company.

not properly erected and handled. Avoidable ladder accidents are still too numerous. The American Standard Safety Code gives suggested methods of handling and care for the user's protection.

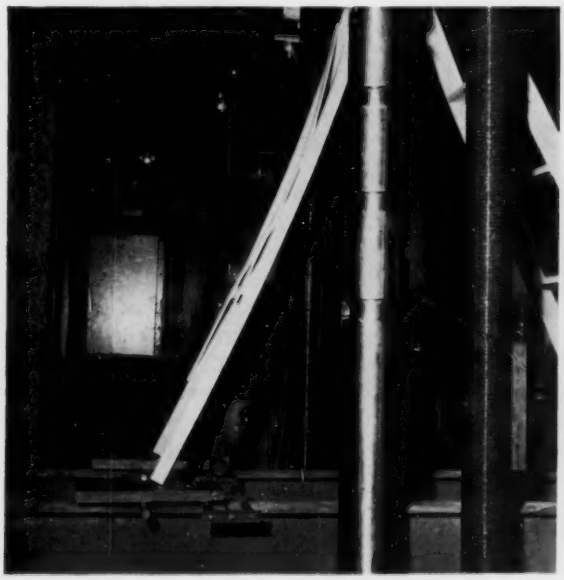
In the establishment of agreed-upon standards, no manufacturer could be expected to lose the identity of his products or his company through agreeing to make each type of ladder identical. This could result in ladders reaching the market with no difference in merchandising or sales appeal. With minimum standards agreed upon, ladder manufacturers are able to design their products in various ways to equal or exceed these specifications.

The new ladder safety code, when adopted, will conform with most state and Federal safety codes. It will serve as a guide in the purchasing of ladders that is sure to be welcomed by all ladder users.

Interesting to note is that states which had not previously considered ladder safety of sufficient importance to establish fixed specifications of their own have now accepted the American Standard Code. It is expected that the new code will be received without question when published, since for the most part few changes have been made. The most important have been to strengthen ladders designed for use by industries and contractors whose ladder requirements are of concern to safety departments of each state.

The American Ladder Institute and its members are conscious of their responsibilities to users of ladders in supplying them with ladders that are built to recognized safety standards. No manufacturer needs to be affiliated with this organization to build ladders in conformity with the specifications it has helped to establish. However, it is believed that through the good work accomplished in conjunction with the American Standards Association, resulting in this code and its adoption, the best interests of all are represented. It is hoped that ladder users will consider carefully the importance of selecting "The Right Ladder for the Job."

Step ladders loaded with the bottom of the front rails and back legs on roller systems, using a four-way universal head in the testing machine and a steel plate covering the top cap. Maximum load, type of failure, and ladder characteristics under loading were recorded in the test.



Standards to Aid Sonar

by **W. J. Trott**

Mr Trott is with the Office of Naval Research, USN Underwater Sound Reference Laboratory, Orlando, Florida. He is chairman of Writing Group S1W20 on Calibration of Underwater Transducers, which is now under the auspices of Sectional Committee S1, Acoustics, sponsored by the Acoustical Society of America.

FROM the time of World War I when the crudest sound equipment was used to locate enemy submarines and other ships, the U.S. Navy has been intensely interested in the science of underwater sound. For much of this time, the Navy has had the field almost to itself. Other applications of liquid-borne sound have developed in comparatively recent years, and the principles developed in making underwater sound transducers[1] are now widely applied in other fields. The Navy still is the best customer for underwater sound and ultrasonic equipment, but electroacoustic transducers are now used in medical research, sonochemistry research, geological and oceanographic studies, precision machine work, and industrial processes.

It has been the Navy, however, that has developed the most advanced methods of measuring the performance of these transducers, and has established the most complete facilities for making the measurements. It was therefore natural that the American Standards Association should look to the Navy when standards for making calibration measurements on electroacoustic transducers became desirable. It was appropriate, too, that the Navy Underwater Sound Reference Laboratory of the Office of Naval Research should furnish a chairman for the writing group assigned the task of preparing the standard.

The result of this writing group's efforts is the American Standard Procedures for Calibration of Electroacoustic Transducers, Particularly for Use in Water, Z24.24-1957.

This standard was written to establish procedures of measurement, terminology, and means for data presentation. It is a complete source of information on design of facilities and on development of a reliable calibrating technique. The section on procedures for measuring performance characteristics of electroacoustic transducers covers the frequency range from a fraction of a cycle per second to several megacycles per second. Facilities and methods of measurement wherein ambient conditions of temperature and hydrostatic pressure can be varied are discussed. The bibliography includes references to all aspects of methods and facilities for calibration.

All of the characteristics of transducers required in the field of underwater sound are discussed in the standard, and the direct measurement of these characteristics or the calculation of them from measurements is described. The discussion covers free-field receiving voltage and current sensitivity, transmitting voltage and current response, directivity for plane-wave receiving or far-field transmitting, various representations of impedance and admittance including motional impedance and admittance, dynamic range determination from measured and derived equivalent noise pressure level, together with the measurement of overload level, directivity factor, directivity index, acoustic power output, electrical power input, efficiency, bandwidth, and quality factor.

Transmitting response, receiving sensitivity, directivity pattern, impedance, mechanical Q, and efficiency are important in evaluating an echo-ranging transducer used in Navy sonar equipment. If the transducer is to be used on a submarine, a knowledge of the effect of variations in hydrostatic pressure and temperature is required. When a transducer is to be used in sonar listening equipment or in noise measurements, the user wants to know the receiving sensitivity, directivity, equivalent noise pressure level, and possibly open-circuit effective bandwidth. If the application warrants it, these measurements may be required over a range of temperature and hydrostatic pressure. In measurements pertaining to the physics of sound in the sea, directivity and response of the transducers as a function of frequency must be determined.

A standard hydrophone to be used in the calibration of other transducers must be calibrated periodically because it is extremely difficult to produce a hydrophone with long-term stability. The response and directivity will be affected by deterioration of pressure-release material. The leakage resistance of piezoelectric crystals may be lowered by water absorption or leakage,

[1] According to the American Standard Acoustical Terminology, Z24.1-1951, a transducer is a device capable of being actuated by waves from one or more transmission systems or media and of supplying related waves to one or more other transmission systems or media. In this case the transducer receives waves from an electric system and delivers waves to an acoustic system, under water.

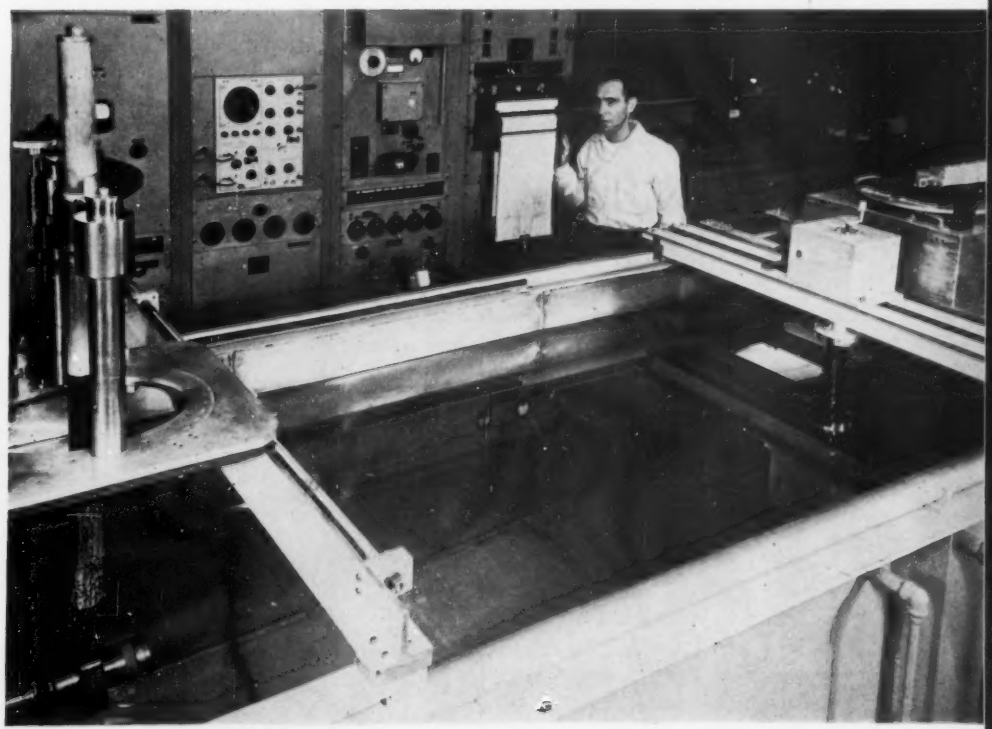
or by chemical reaction of metal with the oil used to couple the crystal acoustically to the water.

Often, the only equipment needed to evaluate a transducer by the methods described in the standard are a few items of electronic equipment that can be readily purchased. If the acoustic medium is sufficiently large or anechoic, the measurements can be made with an oscillator, a vacuum-tube voltmeter, and one or more amplifiers. If the medium does not completely satisfy the requirements for an ideal medium, a means of transmitting pulses of sound waves and a means of gating the receiving system to pass only the desired transmission will be required to simulate the conditions of an anechoic acoustic medium. The required size of the acoustic medium is, of course, a function of the frequency at which the measurement is made. A tank of dimensions four to six feet that is lined with wood is adequate for calibrations above 100 kilocycles per second; a small and deep lake is required for calibrations at frequencies as low as 100 cycles per second.

Because of the broad coverage in the standard of the characteristics of transducers required for the field of underwater sound, the discussion of procedures and the definitions of terminology will benefit scientists who apply transducers to other fields of acoustics. In some fields, such as testing sirens and loudspeakers, the application of free-field calibrations and far-field characteristics of a source are directly applicable. In other fields, such as diathermy and ultrasonic cleaning, a knowledge of the fine structure of the near field could be obtained theoretically after measurements of the far-field characteristics have determined the nature of the source. For example, a comparison of the far-field directivity patterns with an equivalent idealized piston source could yield a valid basis for deriving a near-field pressure distribution in the way described in one of the references in the bibliography. This means of determining the character of the near field would generally be simpler than using an acoustic probe.

The procedures prescribed in the standard will be directly applied mostly by Navy laboratories and Navy contractors on sonar transducers, but the contents of the standard will be of interest to anyone who uses a calibrated transducer. Transducers recently calibrated by these procedures have included probes for blood pressure measurement, seismic pressure wave detectors, geophones, and probes for sonochemistry and biophysics research.

American Standard Z24.24-1957, Procedures for Calibration of Electroacoustic Transducers, Particularly for Use in Water, can be obtained at $2.00 per copy from the American Standards Association, 70 East 45 Street, New York 17, N. Y.



Transducers are calibrated at ultrasonic frequencies in this relatively small water-filled tank with its associated measuring system.

How Companies Use Standards—
ASA Members Exchange Ideas

THE Company Member Conference of the American Standards Association held its Spring Meeting at the Sheraton-Cadillac Hotel, Detroit, April 29 and 30. The men who are responsible for the standards programs of their own companies and who serve as liaison between their companies and the American Standards Association exchanged ideas and discussed mutual problems. During the formal program they heard discussions on how to set up company standards programs, on the technical problems of screw threads, electroplating, and color control, and on the general problems of simplification, use of standards in the cost-price squeeze, and use of specials. Three workshop groups gave everyone an opportunity to ask questions and present his own ideas on the technical questions discussed.

The meeting was opened by James R. Welshman, chairman of the CMC. Mr Welshman is chief engineer, Research and Development Division, Grinnell Company, Inc, Providence, Rhode Island.

J. R. Welshman

H. E. Chesebrough

Mr Welshman is chairman of the CMC; Mr Chesebrough is a member of ASA's Board of Directors.

Vice Admiral G. F. Hussey, Jr, USN (Ret), managing director of the American Standards Association, welcomed the conference and expressed his pleasure in meeting with the CMC members. "It is through you," he said, "that we find out whether ASA is on the right track or not."

The first event on the program was a presentation by Harry E. Chesebrough, member of ASA's Board of Directors, on the American Standards Association itself. Just the day before, Mr Chesebrough had assumed the responsibilities of corporate vice-president of Chrysler Corporation and vice-president of the Plymouth Company. His theme was the support of the American Standards Association by industry.

"Such support is a straight business expense," he said. "The ASA does not exist for whimsical reasons, it is a service organization established to satisfy a need. If it were to fold up tomorrow, its Phoenix would have to rise the next day. American industry cannot get along without it or its equivalent."

"Too many times," Mr Chesebrough commented, "requests for support of ASA activities are referred to a contributions committee or are looked on as a handout to be given grudgingly. Nothing could be farther from reality."

He urged each CMC member to go back to his respective organization and see that ASA is properly understood. "If you do and you are sincere, and I know you are, that standards save you money, demonstrate it by passing on some of the saving to the organization which helped make the standard possible," he said.

Forest H. Bump, standards engineer, Grinding Machine Division, Norton Company, Worcester, Massachusetts, presided at the session on company standards programs. Mr Bump was assisted by Alfred Gastler, Purchasing Department, Consolidated Edison Company of New York.

How to set up a standards program for a small company was the subject of a talk by B. Scott Liston, secretary of the Standards Committee, Diamond Alkali Company, Cleveland, Ohio.

Recognition by management of standardization and its important relation to profitable operation is a must in setting up a standards program, Mr Liston said. He cited eight key factors to a successful standards program.

(1) Establish and recognize the purposes and intent of standards. It should be decided whether standards will affect engineering, construction, stockrooms, consulting associates, or others, before standards are initially drafted, he pointed out. An understanding of the purposes and objectives of the program will facilitate its execution.

(2) Assign working force to standards management and operation. Mr Liston listed the important qualifications for a standards engineer heading such a program. These are patience and understanding of people, interest in the exacting details of standards, endorsement of the principles of standards, a questioning mind, and the ability to be available where and when needed, he said.

(3) Select suitable classifications. An identification or index system is needed since the prime function of standards is to have information available to promote proper use of materials at minimum cost.

(4) Determine specific kinds of standards needed. Selecting types of standards is important for subdividing the classifications.

(5) Pick proper tools to do jobs required. These include a standards form, book binder, file cabinets, a good reference library, equipment for reproducing material, and storage space for maintaining originals or masters.

(6) Define adequate distribution system. Standards books should be assigned to a position rather than an individual, Mr Liston believes.

(7) Enforce standards. Standards should never be mandatory, but they can be enforced, Mr Liston said, meaning that they can be brought into use. He suggests seeking the opinions and experience of those in key positions, and having standards available at key control positions within the organization.

(8) Revise standards periodically and keep them up to date. In one company the standards group spends two-thirds of its time in revising standards.

Mr Liston described the procedures followed by the Diamond Alkali Company in developing standards and the classification system followed.

Note: *This paper will be published in full in a forthcoming issue of* THE MAGAZINE OF STANDARDS.

Speaking on the organizational arrangement by which company standards can best be obtained, D. F. Engstrom called attention to the statement "Standardization is the organized solution of common problems—standards being the recording of such solutions." Mr Engstrom is development supervisor of Cutler-Hammer, Inc, Milwaukee, Wisconsin. Standardization as a formal company activity is the "organizing of the solving of common problems" in order to arrive at best answers in the most efficient manner, he said. There are two basic types of standards organizations. One is the "staff" type of organization; the other is the "committee" type.

In a company that is large and de-centralized, with plants widely spread geographically, the central organization would of necessity be a staff group, he declared, with the possibility of a committee organization in each of the separate plants. A committee type of organization often develops as a result of organizing the natural committee work of groups meeting on their own initiative to solve mutual problems. This was the case with the standardization program at Cutler-Hammer, Mr Engstrom declared.

F. H. Bump

B. S. Liston

D. F. Engstrom

The Cutler-Hammer standards organization consists of four basic parts and groups of functions. (1) The Standardization Executive Committee sets policy, approves all standards, and makes appointments to technical committees. (2) The Standardization Technical Committees develop and recommend needed standards in specific areas. (3) The Standardization Supervisor is responsible for planning policies and procedures, coordinating the work of the technical committees, promoting the use of standards, and maintaining contacts with standardizing bodies outside the company. The Standardization Section, located in the Drafting Department maintains part numbers and raw material records of existing usages, and maintains standard practice references for drafting department use. It also is responsible for printing and distributing the Standards Book, maintaining needed indexes to standard references, and analyzing current practices at the request of technical committees. This group also conducts spot surveys on the use of standards on new designs. Mr Engstrom gave a case history to show how the company's standardization program works.

This committee operation has two main advantages, in Mr Engstrom's opinion. One is the advantage in regard to standards and the other is the advantage to company personnel connected with the work. With regard to standards, the committee operation provides reliability, authority, and acceptance. With regard to company personnel, the use of committees provides for training, development, and evaluation opportunities not otherwise obtainable.

"Committee action may be cumbersome," Mr Engstrom said, "but we feel there is no better way of assuring that resultant decisions will do the best job in satisfying standardization needs."

A. E. Heyson

W. G. Waltermire

R. P. Saltonstall

Alfred Gastler

E. T. Breuer

E. J. P. Cunningham

Allen E. Heyson, standards engineer, Distribution Assemblies Department, General Electric Company, Plainville, Connecticut, served as moderator of the afternoon session. This was devoted to technical discussions followed by workshop sessions.

The new Class 5 Interference Fit Thread was described in detail by W. G. Waltermire, chief product engineer, The Lamson and Sessions Company, Cleveland, Ohio. Mr Waltermire is chairman of Subcommittee 10, ASA Sectional Committee B1 on Screw Threads. He announced that the proposed new standard on interference fit threads is one of the rare standards developed directly from the results of research and that it has been set up on a tentative trial basis. The committee desires that experience be gained in production and that later changes be made in conformance with regular standards

procedure. An interference fit thread, Mr Waltermire explained, is one in which the threaded member is larger than the tapped hole, producing a metal-to-metal interference fit. Following the war, Sectional Committee B1 set up a subcommittee to investigate driving practice in a large variety of materials in which holes are tapped and studs are driven. A two-year survey showed that everyone was having trouble. A research program was then undertaken. Research was first carried out at the Ford Motor Company Research Laboratory at Dearborn in cooperation with Chrysler Corporation, Lamson & Sessions, and the National Bureau of Standards. This was followed by further research on ¼, ½, and ¾ inch sizes, using SAE Grade 5 material in the male member and including aluminum, magnesium, brass, cast iron, Mechanite, rolled steel, and alloy steel for the tapped holes.

Using the data resulting from this research, a standard was developed based on two lengths of engagements—one for ferrous materials and one for nonferrous.[1]

This new standard was tried experimentally with good results, Mr Waltermire reported. Canada and England both became interested. A subgroup of Subcommittee 10 has now been set up under the sponsorship of the National Aircraft Standards Committee to develop a standard for sizes under ¼ inch. Milt Schultheis, Hughes Aircraft, is chairman. A second subgroup has been set up to develop standards in the size range above 1½ inch and to include 8-pitch series and the fine thread series for all sizes. Paul Schulz, Crane Company, is chairman.

Mr Waltermire referred those interested to an article in the September 6, 1956 issue of *Machine Design*, reporting on this research.

In closing, he acknowledged with gratitude the contributions made to this work by the Ford Motor Company, the Chrysler Motor Corporation, the National Bureau of Standards, the Stud Subcommittee of the Industrial Fasteners Institute, and the members of Committee B1's Subcommittee 10.

R. P. Saltonstall, technical director, The Udylite Corporation, Detroit, spoke on ASTM's contribution to the development of thicknesses of cadmium, chromium, and zinc coatings. Mr Saltonstall is vice-chairman of ASTM Committee B-8 on Electrodeposited Metallic Coatings. After briefly describing the types of membership and operating procedures of ASTM Technical Committees, Mr Saltonstall described the origin of specifications A164, A165, and A166. However, he pointed out, because too many ASTM committees were getting out specifications on platings ASTM Committee B-8 was organized to work specifically on electrodeposited metallic coatings. The committee now has some 175 to 200 members, he said. His talk also included a description of ASTM standards A164, A165, and A166, as well as B 142-55.

Color control in the paint industry was the subject discussed by E. T. Breuer, E. I. du Pont de Nemours & Company. When two parts of an appliance housing or an auto body deviate even slightly in color, the prospective buyer gets the impression of shoddy workmanship, Mr Breuer said. Color control required by paint users goes far beyond matching one batch of paint to a standard, he explained. An automobile or major appliance is assembled from components made at some distance from each other in time and space. Therefore, stringent control is needed between each batch, the color standard, and all other batches of that particular color. Added complications exist when paint is purchased from more than one supplier.

Color matching throughout the car is a serious problem since it is almost impossible to match closely the colors on different materials.

Colorimetry can aid in certain color matching problems, Mr Breuer said, although he declared that it is impossible to obtain identical coordinates, or an exact match. Colorimetry has been helpful in determining the reasons for difficulty in matching colors, he said.

Dry standards, prepared from special introcellulose or acrylic lacquers have been most satisfactory and have the advantage of easy storage, nonperishability, easy reference, and easy transmittal to another location.

The method of applying the paint to the color panel used for matching is also important. A completely automatic spray machine has been developed to remove variables, including distance between spray gun and panel, angle of spray gun, and rate of movement of the spray pattern across the panel. Specialized equipment for accurate color control has had to be installed as the result of the use of electrostatic spray application. This has solved many color control problems.

For enamel or lacquer, the wet film must be converted by a process of evaporation of solvent, oxidation, or polymerization to its final dry, relatively hard state. Electrically heated ovens are being used in testing the baking enamels, with special adjustments to give all panels equal heat exposure.

In the final test, which is examination of the panels for color, instruments cannot help, Mr Breuer said. A trained observer must compare the batch panel with a similarly prepared standard panel. This is done using a standardized lamp with standard color temperature. In some cases, however, it has been necessary to adopt the

GENERAL MOTORS stylists choose colors for new cars under natural lighting in glass-enclosed Color Studio.

[1]This standard is now being voted on by Sectional Committee B1.

same illumination as that used by customers in approving the colors. Mr Breuer recommended the adoption of standard illuminating and viewing conditions in industry to avoid much confusion in any work involving color.

Color applied to automobiles was discussed by E. J. P. Cunningham, manager of the color styling studio, Chrysler Corporation, Highland Park, Michigan. Mr Cunningham's subject was "Color Styling for Automobiles." When a car is being assembled, constant reference must be made to color standards, Mr Cunningham said, since color affects not only the major exterior components, but also the myriad of interior trim components such as glove box doors and ashtray faceplates. Colors used on exteriors and interiors are the result of a long evolutionary development process. The standards evolved as a result of this process follow each car to its ultimate end. Color standards are published and circulated throughout the country to insure that any repairs will match the original finish. A car purchased in Oregon can be repaired and refinished in New Hampshire to match precisely the color standard established in a Detroit Color Styling Studio.

An automotive color program and the resulting color standards are developed following research concerning economic and color trends, motivation, esthetic sensibility, and the practical limitations of materials and their application, Mr Cunningham declared. It has been demonstrated that more vivid colors are accepted in good times whereas dark hues sell best in times of depression. The biggest year in automotive sales history, he said, was 1955 when an "explosion of color" struck the automotive industry.

Before beginning a color styling program, the Chrysler Corporation color studio takes the following steps: Competition analysis to determine what other automobile companies have done and are currently doing to establish a trend pattern. Trend research during which color trends generally are studied to determine which color families are likely to be most popular by the time the forthcoming car model is on sale. Allied fields research, to analyze fields other than automotive in which color plays a dominating role. Clientele analysis to determine to whom this particular car is to be sold, and popularity of different colors among prospective customers. Hue requirements are evolved. Two-toning potential is considered. The durability of the colors is checked. Styling management reviews the proposed color program and if it approves, paint suppliers are notified of the tentative color program. Paint vendors then formulate a batch of material to match the styling panel. These test batches are applied on a series of full-size automobiles for final decision by the styling and division managements. If approved, temporary standards are then released for use in manufacturing planning and in advertising, and to regional plants and export groups. They will also be supplied to paint manufacturers for bidding purposes, and for use in checking and mastering application of the colors to the various automobile components.

F. C. Ewert, Materials Engineering Department, Deere and Company, Moline, Illinois, acted as moderator for the Wednesday morning session, April 30.

Standardization and how it can help simplification was the subject discussed by E. R. Friesth, standards engineer of Deere and Company, Moline, Illinois. Mr Friesth first urged that some methods be found to bring about greater awareness of standards on the part of management, appreciation of standards, and consequent expenditure of the necessary standards effort. He also urged that all concerned with standards be aware of the complexities of communications and that they make standards clear, concise, and accessible.

A company has a choice of two types of standardization, he said. He defined simplification as the process of minimizing "interchangeable differences" after they have developed, and standardization as the process of looking ahead and making plans to avoid "interchangeable differences," before they develop. Simplification in these terms, he said, becomes a preliminary process in standardization. In a case where four cast iron parts had been developed to do one job, simplification was used to weed out three of these parts. This process he calls post-

F. C. Ewert

E. R. Friesth

C. W. Stockwell

R. F. Holmes

standardizing. In this case, quadruplicate design costs, pattern costs, scheduling costs, and methods costs have already been paid and cannot be recovered. However, the company gains by reducing costs through increased production quantities of the one remaining part, reduced inventories, and reduced distribution costs.

Opposed to the post-standardization process is a pre-standardization process which helps to avoid the design of the three unnecessary parts, he said. By using the pre-standardization process, "we intercept a new function, the new product, the new material, the new process, and set the standard first," he explained. "We anticipate the recurring problems and predict the patterns of the forthcoming solutions to that recurring problem. We make that prediction on the basis of present technology and our past experience."

Mr Friesth cited the case of the folding cartons. His company's advertising department changed the packag-

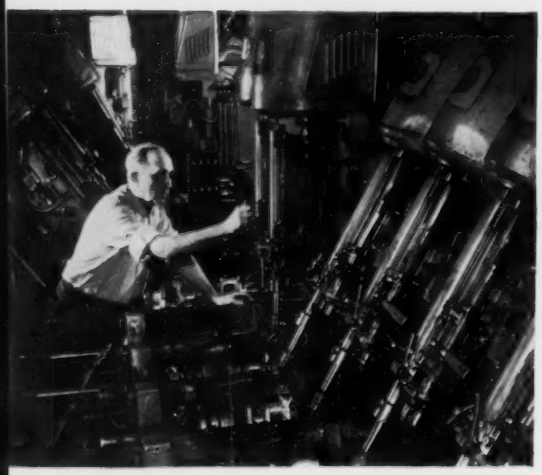
While in Detroit, CM into two groups to vis pany, Rouge Plant, Motors Corporation T

Arrangements for the meet headed by Roy Trowbridge, Others on the committee wer Engineering Department, Bu C. W. Straitor, standards eng James A. Boxall, standards en duction and Office Service De Charles Wright, standards Chrysler Corporation; W. H. S engineer, Burroughs Corporati

ing design, making it necessary to change all of the printing plates involved. This was the larger portion of the cost of introducing a folding carton, so the company decided to simplify the range of carton sizes. With the use of the American Standards on preferred numbers, a logical progression of carton sizes was set up that would fit the company's packaging needs. The cost of changing the printing plates to the new design was reduced by one-third.

Mr Friesth believes the use of data processing equipment will represent one of the most important advances in promoting simplification and standardization. The pace at which standards can be developed is limited largely by the amount of data that can be analyzed in preparing standards, he says. Consequently, major emphasis must be placed on those areas where significant dollar savings can be achieved. By using data processing equipment, catalogs will be highly accurate and can be kept up to date by merely punching the new information into the card and running the deck of cards through the accounting machine once more. Mr Friesth expects the equipment being installed at Deere & Company to reduce the introduction of new parts that are similar to parts already in the line and to uncover possibilities for improved quality and cost reduction through standardization. He also pointed to the use of drafting standards as a means of simplifying communication. The recommendation in the American Standard Drafting Manual on true positional tolerancing, Mr Friesth calls an example of pre-standardization which will help promote the use of this method.

How can standards help you in the cost-profit squeeze? This important and timely question was discussed by C. W. Stockwell, standards engineer, International Harvester Company, Chicago, Illinois. Concerned with the problem of runouts as the result of cuts

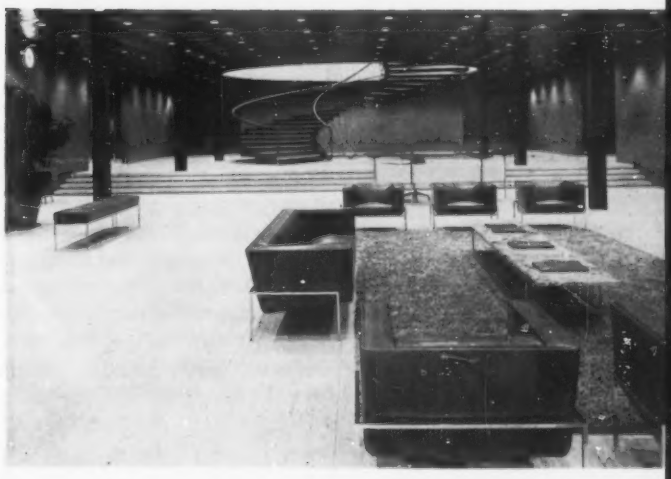


IC members separated it the Ford Motor Com- left, and the General Technical Center, right.

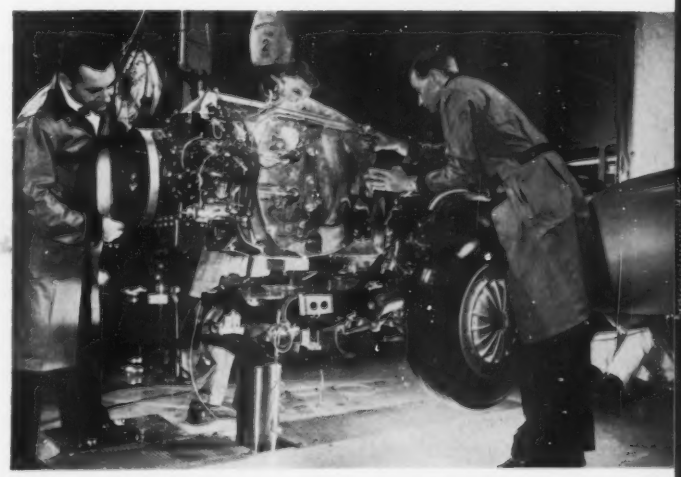
ing were made by a committee General Motors Corporation. : R. J. Abele, chief, Standards urroughs Corporation, Detroit; ineer, Detroit Edison Company; gineer, Engineering Staff, Repro- partment, Ford Motor Company; ngineer, Engineering Division, Sanborn, assistant chief standards m, Detroit.

in inventories, Mr Stockwell suggested that common sense simplification such as the elimination of duplicate parts and maximum use of parts across a line of products will cut inventories. "Such measures alone will lower stock handling and purchasing cost," he said.

A more positive approach that will pay off in large dollar dividends is application of an active company standards program making full use of all applicable national and industry standards and accepted practices, he said. In line with this suggestion he cited a number of examples where International Harvester has made noticeable savings through use of standards in the mechanical engineering field. Among these were reduction of the number of stock lengths of bolts with a consequent gain upward to approximately $200,000 productivity per year plus a considerable saving in reduction of tool cost. He urged that engineers keep in mind the bolt length increments recommended by the



MAIN ENTRANCE of Research Administration Building (top) at GM's Technical Center, and lobby (center). Unusual staircase has steps of emerald pearl Norwegian granite, held by thin stainless steel suspension rods. (Below)—Latest experimental gas turbine engine developed at Center is being installed in Firebird II.



SPECIAL PURPOSE machine at Ford plant (far left) drills entire oil system in automobile crankshaft in one continuous operation. Front end of new car, being lowered onto chassis (left), includes grille, headlights, fenders, and radiator, and was built on sub-assembly line adjoining the final assembly line.

bolt industry as the most economical manufacturing practice so that new products will incorporate the stock sizes for assembly from the beginning.

Similar savings were realized through adoption of the American Standard finished hex nut, he said.

The company is now attempting to apply the new Proposed American Standard interference fit thread referred to by Mr Waltermire in the paper presented earlier at the Company Member Conference meeting. Mr Stockwell expects that adoption of this thread will reduce variety and also reduce cost.

The result of this program is that the products now specified conform to recommended standards that are readily available from the company's internal sources as well as from outside suppliers, on an interchangeable basis from both a dimensional and quality standpoint. This will avoid almost entirely any possibility of inventory run-out and has cut costs, Mr Stockwell said.

In the 83 different material areas for which specifications are written and published, many of the IH Engineering Material Specifications are based wholly or in part on ASTM specifications, and many of these are also American Standards. This group of standards, Mr Stockwell said, has contributed much in the cost-profit squeeze.

Standards apply also to manufacturing procedures, processes, equipment, and tools, and these also contribute to reduction of inventories.

Shop safety is another area where application of standards in manufacturing produce important, although intangible, savings. International Harvester has recently issued a Manufacturing Standard based on American Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels, B7.1-1956. It has also recognized the National Bureau of Standards tentative standard covering safety goggles. Estimates indicate savings of from 40 to 50 thousands of dollars annually through adoption of standard safety goggles, he said. Preventive measures established through adoption of safety standards also cut manufacturing cost by preventing industrial accidents that cost money, both in actual dollars and lost time.

Note: *This paper will be published in full in a future issue.*

R. F. Holmes, standards engineer, A. C. Spark-Plug Division, General Motors Corporation, Flint, Michigan, spoke on the relationship of specials to standards. Using as examples the American Standard Unified and American Screw Threads, B1.1-1949 and the American Standard Pipe Threads, B2.1-1945, Mr Holmes showed how companies may adapt these standards for special needs. For example, where it is desirable to limit the tolerance on the minor diameter of internal threads to develop the optimum strength of the mating fastener, lengths of engagement may be shorter than the standard. In other cases, due to combinations of mating materials, the length of engagement may be longer in addition, allowances for plating on both external and internal threads, extruded sheet metal tapped holes, such as tee nuts and cored holes in die castings, may require a departure from the standard. Mr Holmes showed examples of his company's standards in which these problems had been met.

In the case of pipe threads, he mentioned the need for special short pipe thread lengths in lubrication fittings and economy tube and pipe fittings. These will be included in the Proposed American Standard on Dryseal Pipe Threads, and in Part II of Handbook H-28, Screw Thread Standards for Federal Services, Mr Holmes said. He also called attention to special diameter pitch combinations of dryseal taper pipe threads that have come into limited use. Recently, he said, design limitations have required special pipe threads midway between the present nominal pipe size steps with the same threads per inch as the present range. He pointed out that it has been possible to base the dimensions for all of these special taper pipe threads on the formulas for taper pipe threads shown in the dryseal standard.

Standards give the designer proven good design practice in various combinations to meet his particular requirements, he pointed out. And, he said, the specials of today may well become the standards of tomorrow. As an example he pointed to the proposed revision of American Standard B18.6-1947 which will include slotted, recessed head machine, wood, and tapping screws and trim head tapping screws.

In summing up this session, Mr Ewert pointed out that CMC members have an opportunity in meetings such as this to pick up a great deal of information from others and thus avoid many mistakes.

CMC members were invited to visit the Ford Motor Company, Rouge Plant, and the General Motors Corporation Technical Center. They separated into two groups to visit these plants.

An interesting feature was the pre-conference meeting of the Standards Engineers Society of Detroit. All CMC members who arrived in Detroit Monday evening were invited to attend the SES meeting. Many of them accepted the invitation. Roy P. Trowbridge was the speaker. His talk on the standards program of the General Motors Corporation was received with great interest.

R. P. Trowbridge

Mr Trowbridge was chairman of the CMC Arrangements Committee for the 1958 Spring Meeting.

Many of the CMC members also stayed in Detroit until Thursday morning in order to visit the Electronic Data Processing Center of the Ordnance Tank-Automotive Command. This is the largest center of this type in the world. This visit, at the invitation of the commanding general, was made possible through the efforts of S. H. Watson, RCA Victor-Division, Camden, N. J.

Electrical World

Editorial Comment

MARCH 17, 1958

Dimensional Standards for Bushings – An Accomplishment

The American Standards Association will this month publish dimensional standards for apparatus bushings for use on outdoor circuit breakers and power transformers above 69 kv—ASA C76.1a-1958. This action brings to a workable conclusion efforts to solve one of the industry's oldest and most vexing problems: dimensional interchangeability of apparatus bushings.

All credit and appreciation is due to men of ASA Committee C76 who worked on this project. The ultimate success of their efforts testifies to their persistence and capacity to reconcile many divergent views and interests. But perhaps more significantly it demonstrates the urgency of the industry's need for bushing standardization.

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For many years considered irreconcilable, the need for interchangeability of apparatus bushings was first felt in the 1920's. At that time producers had evolved a series of bushing vintages, all with different dimensions. Spare parts inventories and the cost of repair facilities became a major problem. Urged on by large-system operators, of that time, AIEE committees attempted such standardization. The results were limited to standardization in the broadest terms, such as creepage distances and flashover values.

Renewed efforts in the late 1930's to work out interchangeability, this time through the ASA C76 Committee, were delayed by World War II. But the problem was attacked again with the coming of peace.

Today's new standard is the culmination of these efforts. Although it appears deceptively simple, the number and complexity of the operating and design problems were so great that at one point the participating manufacturing group felt design problems alone were impractical of solution. But operating problems and recognition of maintenance costs had become so great that system operators insisted on further efforts to standardize. Largely as a result of their insistence, manufacturers were able to reconcile their differences and agree on dimensions which appeared both practicable and usable.

As soon as agreement seemed assured and proposed dimensions acceptable to all groups, manufacturers in general adopted them. As a result bushings and equipment meeting the new standard have been available on most major equipment for some time. Design and tooling problems have been solved to the point where users can secure standard bushings and apparatus today from their normal sources of supply. By means of simple adapters these standard bushings can also be fitted to older equipment.

But availability of interchangeable bushings does not make a standard successful. No standard is any better than the acceptance and usage that it receives. It will take positive support on the part of the manufacturers and the user if full benefits of the standards are to be realized. The dedicated men who worked to build this standard have done their part. It now remains for the utilities and apparatus manufacturers to give these efforts the endorsement of full and complete acceptance and use.

American Standard C76.1a-1958, Electrical and Dimensional Characteristics of Outdoor Apparatus Bushings (Used with Power Circuit Breakers and Outdoor Transformers), is a supplement to and partial revision of American Standard C76.1-1943. Copies can be obtained from the American Standards Association at 50 cents each.

WHAT IS YOUR QUESTION?

When adopting national standard specifications, does your company assign and use its own reference numbers or utilize the national reference directly?

We adopt industry standard numbers whenever such standards exist. For example, the Anti-Friction Bearing Manufacturers Association developed Industry Standard Numbers we are now including in our specifications. Industry Standard Numbers give us flexibility in making our purchases. The Industry Standard Number can be cross-referenced to all equivalent manufacturers' numbers for that particular item.

—Reply by H. W. Christensen, Columbia-Geneva Steel Division, United States Steel Corporation, to question asked at the National Conference on Standards, San Francisco, California, November, 1957.

Performance type specifications are recognized as desirable. In what way is Government able to formulate superior performance requirements?

The Government is able to formulate superior performance requirements because of its experience in centralized large-scale purchasing coupled with its extensive facilities in many areas for testing and the development of test methods.

—Reply by Dr A. T. McPherson, Associate Director, National Bureau of Standards, to question asked at the National Conference on Standards, San Francisco, California, November, 1957.

Will the Government agencies (MIL) accept low-carbon steels to AISI standards rather than to QQ certification? AISI is a formulation standard and the QQ a performance specification, one being cause and the other effect, yet QQ steels are considered "specials."

AISI (American Iron and Steel Institute) standards represent control based only on chemical composition. There is no indication from the chemistry of steels as to the physical properties which may be present or which should be required in the finished products. Accordingly, in preparing Federal Standard 66A "Steel-Chemical Composition and Hardenability," the following statement was developed in concert with the industry: "The steel numbers identify only the chemical composition ranges and limits; and for H-Steels, also the hardenability limits. The steel numbers are not identifications of quality."

If the question raised has been brought up with regard to overspecification for given applications, we feel that this is a matter to be reviewed with the responsible military activity to secure a common position, but in no case can we find support even in the producing industry for abandoning requirements for physical properties in favor of specification strictly on the basis of chemical composition.

—Reply by J. M. Goldsmith, Armco Steel Corporation, to question asked at the National Conference on Standards, San Francisco, California, November, 1957.

Does the use of AAR specifications discourage the use of improved materials and designs by the railroads?

AAR (Association of American Railroads) specifications are under continued review by the AAR Committee on Specifications for Materials. Comparison is also made with other nationally recognized standards such as American Standards, and standards of the Society of Automotive Engineers and the American Society for Testing Materials. This is done to determine if such standards are suitable as substitutes for the AAR Specifications or if possible to cross-reference where the material is identical. As improved materials and designs are made available to the railroads, they are studied by this committee as well as other appropriate committees and tests may be made at the AAR Research Center in Chicago. If such materials and designs prove to be satisfactory, the specifications are revised to permit their use. In some cases they may be given tentative approval subject to service tests and performance, or may be approved as an alternate AAR Standard. In this manner the specifications set up a standard and basis for purchases but are subject to revision as technological advancement or improvement occurs and becomes evaluated.

—Reply by M. C. Nystrom, Southern Pacific Company, to question asked at the National Conference on Standards, San Francisco, California, November, 1957.

Couldn't the du Pont program be more effective by coordination with other large companies, i.e., General Motors, General Electric, Westinghouse, etc? What has been done along these lines?

There are three levels of standardization: the international level (International Organization for Standardization), the national level (American Standards Association, American Society for Testing Materials, American Society of Mechanical Engineers), and the company level. Du Pont is active in all three categories, supplying many members for committees working on all phases of standards and associated subjects. Through these contacts, we, on the national and international level, and through personal visits and prepared technical papers on our program, maintain an interchange on the company level.

—Reply by D. F. Hollingsworth, E. I. du Pont de Nemours & Company, to question asked at the National Conference on Standards, San Francisco, California, November, 1957.

NEW BOOKS . . .

ASTM STANDARDS ON IRON CASTINGS. December, 1957. 168 pp. 6 x 9. American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa. $2.75. All ASTM standards pertaining to iron castings are compiled in this volume, containing 32 standards relating to pig iron, gray iron castings, cast iron pipe, nodular iron castings, malleable iron castings, welding rods and electrodes and general methods of test.

RECOMMENDED METHODS OF TEST FOR VOLUME AND SURFACE RESISTIVITIES OF ELECTRICAL INSULATING MATERIALS. IEC Publication No. 93. First edition. 1958. International Electrotechnical Commission, 1 rue de Varembé, Geneva, Switzerland. (Copies available from the American Standards Association, 70 East 45 Street, New York 17, N. Y.) $2.40. Contains definitions of the quantities measured, general information on tests, and minimum requirements for the test report. Recommendations are given for shapes of

test specimens and electrodes for solid insulating materials, test specimens and cells for liquid insulating materials, electrode materials for solid samples, calculation of volume and surface resistivities, conditioning, applied voltage, mounting specimens, and general principles. Seven figures are included illustrating the use of various types of electrodes and the circuits to be used for the measurements described.

Recommended for use by national standards bodies to bring the national standards of different countries more closely into agreement with each other, this publication was approved by the IEC national committees of Austria, Belgium, Denmark, France, Germany, Japan, Netherlands, Norway, Sweden, United Kingdom, USA, USSR, and Yugoslavia.

RECOMMENDATIONS FOR FUNDAMENTAL PARAMETERS FOR PRINTED WIRING TECHNIQUES. IEC Publication No. 97. First edition. 1957. International Electrotechnical Commission, 1 rue de Varembé, Geneva, Switzerland. (Copies available from the American Standards Association, 70 East 45 Street, New York 17, N. Y.) $0.80. This publication, which has been explicitly approved by the national committees of the USA and 11 other countries, specifies the nominal spacings between the centers of holes used for fixing and connecting the components to the printed wiring board, the nominal diameter of the holes and gives preferred thicknesses of the laminated plastic boards used for printed wiring. Some indications concerning components for use with printed wiring are also given.

NONDESTRUCTIVE TESTING SYMBOLS. 1958. 10 pp. American Welding Society, 33 West 39 Street, New York 18, N. Y. $1.00. Prepared by AWS Committee on Nomenclature, Definitions and Symbols, this standard establishes the symbols for use on drawings to specify nondestructive tests for determining the soundness of materials. By using this standard it is possible to specify in a single symbol the type of test required: Radiographic, magnetic-particle, penetrants, or ultrasonic. The standard shows how to assemble the elements of the testing symbol and how to specify the extent of nondestructive tests.

THE Tower of Babel was never completed because, according to the Bible, Jehovah confounded the language of the builders "that they may not understand one another's speech."

Today, about 2,800 living languages are recognized, not counting innumerable dialect variations. But as the world is growing more and more into one interdependent whole, people are beginning to standardize on a few languages. Already about one-half of the world's population speaks at least one of the five most widely used world languages—English, Russian, Hindustani, Spanish, and "official" Chinese.

A common language is the most basic standard needed for every cooperative human endeavor.

"When they have all one language," it says in Genesis 11, "nothing will be restrained from them which they have imagined to do."

This is true for humanity as a whole, as well as for every individual project undertaken by a group of men.

When the International Electrotechnical Commission was founded to develop international electrical standards, its members soon discovered that the most basic standard needed for their work was a standard vocabulary of electrotechnical terms. This they developed, enlarging and revising it in the course of time, until a new edition will now contain 5,000 terms, each term being expressed in eight languages, with definitions in two languages.

Nuclear research and development brought together scientists and engineers from many different fields — physicists, chemists, engineers, biologists, medical men, and others. Many of them used terms from their own fields for nuclear concepts and materials, and often these terms differed from those used by other experts. A common language was needed to avoid misunderstandings, errors, and delays. Through the cooperative efforts of 28 American technical societies and Government bodies, and six divisions of the National Research Council, a "Glossary of Terms in Nuclear Science and Technology" was developed. It was approved in 1957 as an American Standard.

This American Standard is now being studied by the International Organization for Standardization as a basis for the development of a tri-lingual international glossary.

No standard work is possible without a standard language.

FROM OTHER COUNTRIES

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. Titles are given here in English, but documents are in the language of the country from which they were received. An asterisk * indicates that the standard is available in English as well. For the convenience of readers, the standards are listed under their general UDC classifications. In ordering copies of standards, please refer to the number following the title.

51 MATHEMATICS

Austria (ONA)

Geometrical orientations ÖNORM A 6420

India (ISI)

Guide for inter-conversion of values from one system of units to another IS 787-1956

Portugal (IGPAI)

Rounding off numbers NP 79

542 EXPERIMENTAL AND PREPARATIVE CHEMISTRY

Germany (DNA)

Laboratory apparatus, test tube clamp DIN 12894
Laboratory apparatus: filtering bottle with tube DIN 12476
Glass serpentine condenser DIN 12585
Mortars and pestles for laboratory use DIN 12906

Hungary (MSZH)

2 stds for laboratory autoclave sterilizers MSZ 2353/4-56
Laboratory thermostats MSZ 6620-56

India (ISI)

Specification for graduated measuring cylinders IS 878-1956

United Kingdom (BSI)

Carbon and hydrogen combustion train (Pregl type): Microchemical apparatus BS 1428:Part A1:1958
Vacuum drying ovens for microchemical purposes: Microchemical apparatus BS 1428:Part G2:1957
Filtration apparatus for microchemical analysis: Microchemical apparatus BS 1428:Part F1:1957

USSR

Filler sleeves, ceramic GOST 8261-56

547 ORGANIC CHEMISTRY

India (ISI)

Specification for ethylene dichloride, technical IS 869-1956
Specification for BHC, refined IS 881-1956
Specification for gamma-BHC (Lindane) IS 882-1956
Nicotine sulphate solution IS 1055

Israel (SII)

Fillings for portable carbon tetrachloride extinguishers SI 213

Spain (IRATRA)

Technical ether, characteristics and testing methods UNE 55017

United Kingdom (BSI)

2-ethoxyethanol (ethylene glycol monoethyl ether) BS 2713:1956
Methylcyclohexanol BS 2714:1956

USSR

Pyridin bases, heavy GOST 7922-56
Nitro-benzol, technical GOST 318-56

621.1/.9 MACHINERY DETAILS

Germany (DNA)

Rules of reception of steam generators DIN 1942

Japan (JISC)

3 stds (bound together) for control handwheels and handles JIS B 2601/3

United Kingdom (BSI)

Cylindrical land steam boilers of welded construction (other than water-tube boilers) BS 2790:1956
Steel boilers (solid fuel fired) and sterilizing plant for milk utensils for use on farms BS 2809:1956

621.753 GAGING AND GAGE MAKING

Germany (DNA)

ISA system of tolerances and fits, basic hole DIN 7154
ISA system of tolerances and fits, basic shaft DIN 7155
Diagrams for graphical determination of press-fits DIN 7190
2 stds for "go" and "not go" snap gages of steel plate, nominal dimension 2 to 160mm DIN 2236/7

Japan (JISC)

Plain limit gages JIS B 0402-1955*
2 stds for in- and outside calipers JIS B 4607/8-1955*
Fit system for engineering (1-500 mm) JIS B 0401*

Poland

14 stds (bound together) for comparative tables relative to three systems of tolerance and fits: ISA, -OST, -PKN PN M-02415/28

Roumania (CSS)

Ring gages for male Whitworth thread STAS 4676-55
Ring gages for male metric thread STAS 4677-55

United Kingdom (BSI)

Cast iron surface plates and granite surface plates for inspection and marking purposes BS 817:1957

USSR

Tolerances and fits, basic notions GOST 7713-55
Limit gages for shafts and holes GOST 7660-55
Depth gage, dial GOST 7661-55
Gear tooth caliper, dial GOST 7760-55
Tolerances and fits for sizes from 500 to 10000mm GOST 2689-54
Tolerances and fits for sizes under 1mm GOST 3047-54
Gages for gas pipe taper thread GOST 7157-54
Micrometer depth gage GOST 7470-55

Yugoslavia (JUS)

39 stds on ISA tolerances and fits system JUS series M.A1

621.82 TRANSMISSION SYSTEMS AND PARTS

Bulgaria

Journal bushings BDS 2369
Ball- and roller-bearing holding bushings BDS 2426
Ball- and roller-bearing holding nuts BDS 2427
Lock-washers for ball- and roller-bearing bushings BDS 2428
Two-piece housing for radial ball-bearings BDS 2433
Two types of rigid coupling BDS 2442/3

Hungary (MSZH)

2 stds for plumber-block with roller bearings MSZ 7891, 7894-57

Japan (JISC)

Radial ball-bearings JIS B 1531
2 stds for rules for inspection of ball-bearings JIS B 1541/2
Metal powder sintered bearings, oil-impregnated JIS B 1581

Poland

Roller bearings, radial, single row PN M-86187
Roller bearings, radial, double row PN M-86245

Spain (IRATRA)

Tolerances for radial bearings UNE 18 031

621.92 ABRADING, GRINDING, POLISHING

Austria (ONA)

Artificial metal grinding wheels, testing of ÖNORM M 4811

India (ISI)

Specification for valve grinding paste IS 1004-1956

Ireland (IIRS)

Hacksaw blades	I.S. 72
Emery cloth	I.S. 77
Glass paper	I.S. 78
Flint roll paper	I.S. 79
Garnet paper	I.S. 80
Garnet cloth	I.S. 81
Aluminum oxide paper	I.S. 82
Aluminum oxide cloth	I.S. 83
Silicon carbide paper	I.S. 84
Silicon carbide cloth	I.S. 85
Silicon carbide waterproof paper	I.S. 86
Silicon carbide waterproof cloth	I.S. 87

USSR

Drill sharpening machine tool, basic sizes GOST 1221-58
Fiber polishing discs GOST 8692-58
Cutting tool grinding machine tool GOST 971-58

625.2 RAILWAY ROLLING STOCK

Brazil (ABNT)

Terminology for parts of railroad trucks TB-5R

France (AFNOR)

2 stds for theoretical profiles of wheel tyres 140mm NF F 02-401
NF F 24-401
Swinging door stops, details NF F 31-010
Eye bolts NF F 00-025
Cold flanged leaf springs. Cotters. Keys NF F 01-081
Rough tires (except those of 134mm), tolerances NF F 01-403
Theoretical profile for tires of 134mm NF F 03-402

Germany (DNA)

Valve seat for locomotives, nominal width 10 to 50 DIN 33100
Valve seat for locomotives, nominal width 32 to 80 DIN 33105
Valve rods for locomotives DIN 33107
Wick holder for rail car lubricators DIN 1590
Choice of tolerances and fits for railroad cars DIN 5601

Italy (UNI)

2 stds for railroad tanks for transportation of liquids UNI 3877/8

Japan (JISC)

Axle JIS E 4502*
Dust guard for plain bearing axle box JIS E 4702*
Door engine for rolling stocks JIS E 6501*
Automatic coupler JIS E 4201

Poland

2 stds for wheel rims of narrow-gage locomotives PN K-91035/6

Spain (IRATRA)

Locomotive firebox door UNE 25090
Profile of wheel rims for 1 m track UNE 25102
Looking glasses for passengers' compartments in railroad cars UNE 25104

United Kingdom (BSI)

Steel slabs, plates, sections, bars, and rivets BS 24:Part 6:1957

628.9 ILLUMINATING ENGINEERING

Belgium (IBN)

Design of special requirements for public lighting installations NBN 429

Denmark (DS)

Directions for lighting in hospitals DS 703

Germany (DNA)

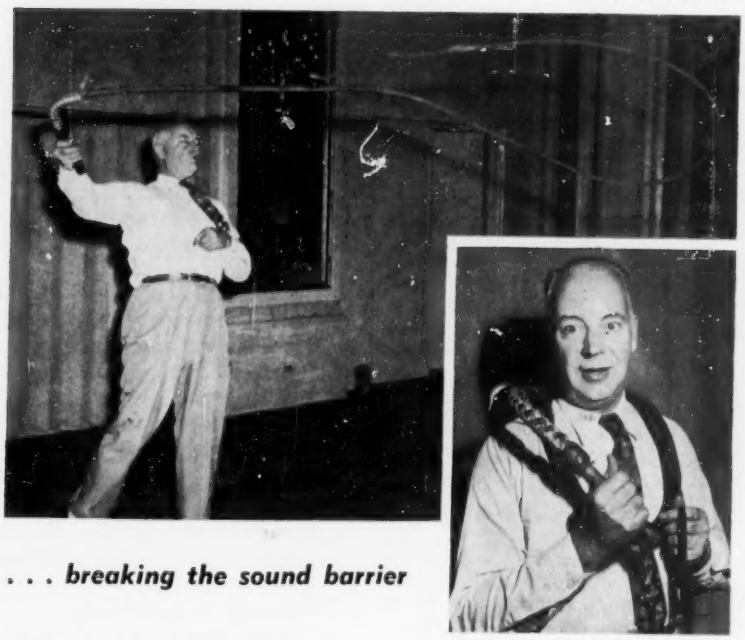
General illumination in mines DIN 22434

Indio (ISI)

Glass shells for general lighting service lamps IS 1112

news briefs . . . . .

Wide World Photos



. . . *breaking the sound barrier*

Dr Trent cracks the whip he used to illustrate his talk on "The Dynamics of the Bull Whip" at recent meeting of the Acoustical Society of America.

• Man broke the sound barrier long before he developed airplanes, Dr Horace M. Trent told the Acoustical Society of America at its meeting in Washington, D. C., May 9. He demonstrated by cracking a bull whip. The tip of the whip travels about 1,000 miles an hour, he said, and the loud crack is made when the whip breaks the sound barrier. Dr Trent is chairman of Sectional Committee S2, Mechanical Shock and Vibration, and is head of the Applied Mathematics Branch, Mechanics Division, Naval Research Laboratory, Washington, D. C. A meeting of Sectional Committee S2 was held May 8 during the meetings of the Acoustical Society.

• The Mead Corporation, Chillicothe, Ohio, announced recently that it has adopted the American Standard Safety Code for Pulp and Paper Mills, R1.1-1956. The company named three men to serve as a committee to survey Mead's paper mill for compliance with the standard. This committee works with the heads of departments in making the survey, and reports its findings to the division manager. A time limit is set for bringing conditions into compliance. As each item is taken care of, it is reported to the division manager. He keeps Mead's top management advised of progress.

"Making the American Standard our own Mead standard gives us a check list of hazards to guard against," Division Manager O. B. Mason said. He pointed out that in many cases Mead's present practice was already more exacting than the standard calls for.

"All new installations of machinery, equipment, tools, etc, shall meet the requirements of the standard," announced Mead's executive vice-president George H. Pringle. "We've adopted the standard to help us make sure we don't overlook needed mechanical measures for the safety of our employees. In some cases, the standard also refers to safe practices, such as the wearing of protective clothing or equipment. We'll need the help of the employees on these jobs if we are to comply with our new standard."

• Two men who are active in the work on construction standards of the American Standards Association were named recently by New York City's Mayor Robert Wagner as members of the City's Board of Standards and Appeals. Max H. Foley, first chairman of ASA Sectional Committee A62 on Coordination of Dimensions of Building Materials and Equipment, was appointed for a six-year term. He represents the American Institute of Architects on Committee A62. Harold R. Sleeper, well known for his own work and extensive interest in architectural

and construction standards, is a member of Sectional Committee A52 on Building Code Requirements for Chimneys and Heating Appliances and of Committee A108 on Installation of Ceramic Tile. He was appointed by Mayor Wagner for a five-year term. Mr Sleeper represents the American Institute of Architects on Committee A52, and the Tile Council of America on A108.

The Board of Standards and Appeals hears cases concerned with construction and zoning laws of the City of New York and has charge of tests and approval of building materials and appliances. It also makes rules for putting building regulations into effect. It was reorganized early in 1958 to speed up its operations.

• A revised edition of the American Standard Markings for Identifying Grinding Wheels and Other Bonded Abrasives, B5.17-1949, now includes two new symbols. These provide for two new methods of bonding abrasives. The letters "RF" will now identify rubber-reinforced bonds and the letters "BF" identify the resinoid-reinforced bonds.

This standard establishes a symbol for each of the most essential characteristics of a grinding wheel and arranges the symbols in uniform sequence. It applies to segments, bricks, sticks, hones, rubs, and other shapes, which are tools used to remove material, alter shape or size, or produce a desired surface or accuracy of dimensions. It does not apply to diamond wheels or to specialties such as sharpening stones. Entirely different symbols are commonly used for these.

Standard identification symbols for grinding wheels should be presented in the following sequence: Abrasive type; grain size; grade; structure; bond type; manufacturer's record. The letters and numerals corresponding to the characteristics of the wheels are given in the standard.

The revision was prepared by the Grinding Wheel Institute and submitted to Sectional Committee B5, Small Tools and Machine Tool Elements, for their consideration and action. B5 approved the proposed revision without change.

Copies of American Standard B5.17-1958 are available at ASA at $1.00 each.

• In a move to discourage duplicate international activities on standardization, the International Organization for Standardization has recommended a procedure to be followed by the United Nations Economic and Social Council. The recommendation was forwarded to the Secretary General of the United Nations and is being circulated for consideration by the Council's Committee on Non-Governmental Organizations. The recommendation reads:

"The International Organization for Standardization

"*Recognizing* that standardization is frequently a possible means of solution for problems concerning the Economic and Social Council, its regional commissions and their subordinate committees;

"And being desirous of eliminating duplication of effort in the field of standardization, suggests the following procedure:

"(1) When a problem confronting the Economic and Social Council or one of its subordinate organs appears susceptible to solution through standardization, the nature of the problem should be communicated promptly to the General Secretary of the International Organization for Standardization.

"(2) Upon receipt of such communication, the General Secretary will furnish the organ concerned with all approved ISO Recommendations bearing on the matter in question and will further notify the secretariat of the ISO technical committee in the field of the interest on the part of an organ of the Economic and Social Council.

"(3) The secretariat of the technical committee will communicate promptly with the indicated organ of the Economic and Social Council conveying information as to work in progress and to scheduled meetings which may be of interest to the United Nations organ and, further, will arrange for liaison representation of the technical committee at meetings of any group established for the purpose by the United Nations organ and reciprocal liaison by the United Nations group with the ISO technical committee at its forthcoming meetings.

"(4) Should there be no ISO technical committee organized in the field, the General Secretary will take steps through the established ISO procedure to determine whether a technical committee can be established for the purpose of assisting the United Nations organ concerned.

"Further, the ISO suggests that the attention of delegations to the United Nations be brought to this proposal to the end that each such delegation may as a matter of standard practice advise its own national standards body of the United Nations interest in a standardization problem."

• The American Standard for Photographic Thermometers, PH4.7-1958, recently approved and published by the American Standards Association, replaces PH4.7-1956.

Concerned with measurements of temperatures for various photographic processes, the standard covers fluid-in-glass columnar thermometers and bimetallic thermometers in the following two grades: Grade 1, for critical photographic processes generally controlled to ±0.5 F (0.3 C), such as color developers; and Grade 2, for average photographic processes generally controlled to ±2 F (1 C).

The revisions include references to calibration of thermometers and visibility of temperature readings under darkroom illumination.

The standard was developed and revised through cooperative efforts of manufacturers and users of photographic equipment working under ASA procedures.

Copies of American Standard PH4.7-1958 for Photographic Thermometers are available at 25 cents each.

• An extensive revision of the American Standard Specifications for Photographic Films for Permanent Records has just been published by the American Standards Association. The revised version, designated PH1.28-1957, replaces American Standard Z38.3.2, which was approved in 1945. Scientific and technological advances realized in this field during the past 13 years have been incorporated in the new publication.

The standard is concerned with the raw stock for permanent record film as well as with the processed film that is used for storage. The standard applies to microfilms, motion-picture films, roll films, and sheet films of the safety-cellulose ester type having gelatine-silver halo

emulsions developed in ordinary processing solutions to produce a so-called black and white photographic image.

The principal changes made in the revised version are as follows: (1) substitution of the MIT Fold Test for the Pfund Test because of availability and convenience of the instruments; (2) new flexibility limits to cover films of various thicknesses; (3) omission of the *p*H test, which is not applicable to cellulose triacetate; (4) revision of the viscosity test to cover cellulose triacetate; (5) revision of the limits for residual thiosulfate for films of different grain sizes and for films with coatings on both sides of the base; and (6) specifications of the image to be selected for thiosulfate analysis and restriction of the time in which the analysis may be performed.

The original American Standard was based on requirements of the National Bureau of Standards for record films used by the United States Government for copying permanent original records. The destruction of certain original Government records after they had been copied on record film was authorized by a Congressional bill in 1940.

Since that time, great advances have been made in the use of photographic films for the preservation of records, it is pointed out in the foreword to American Standard PH1.28-1957. Considerable interest is also being shown in the safekeeping of pictorial records having legal, scientific, industrial, or historical value. The preservation of film records by national, state, and municipal governments throughout the country, and by banks, insurance companies, and other enterprises was stimulated by a recognition of the economies that result from the use of film records through reduction of storage space, better organization and accessibility, and ease of reproduction.

American Standard PH1.28-1957 is the result of the cooperative efforts of 18 organizations, including photographic manufacturers, several Government departments, professional organizations, and others concerned with the use and safety of record films.

Copies of American Standard Specifications PH1.28-1957 for Photographic Films for Permanent Records may be obtained at 50 cents.

(*Continued on page* 182)

Standards Outlook

by LEO B. MOORE

Mr Moore is Associate Professor of Industrial Management, Massachusetts Institute of Technology, where he teaches a full-term course in industrial standardization.

Standards Assessment

Evaluation of standards activity and results has many more facets to it than the simple one of attaching a dollar value to the effort and to the benefits. From time to time, we have been concerned with several of these aspects in the form of the appropriateness of evaluation, its extent, the technique to be used, its validity, and others. Clearly we have not yet reached full-blown conclusions about this controversial area of standards, because further thought uncovers another aspect and yet another.

Suppose we take another look then at this problem. If we assume that we can spend our money only once and that when we spend it the situation and its choices exist for that single moment, then it becomes logical to assume that the only purpose of evaluation is to be assured that we made the right choice. The question of "rightness" has a time dimension as well as a monetary aspect. In fact, seen in this perspective, evaluation has several dimensions and many of them may be more powerful and persuasive than the dollar.

In any event, our ability to assess properly these dimensions is directed toward increasing our fundamental assurance about standards work, but also, even more importantly, toward increasing our number of right choices. At this point is seems clear to me that many times evaluation has been pursued as a means to show that standardization is a good thing. This, in my opinion, is wrong. Standardization must stand on its own feet as a principle of management, of engineering, and of operation. Standards work becomes assessed as to its effectiveness through evaluation of its choices and its results. The decision to employ standardization as a principle of management should not be made, as I see it, on such tenuous reasoning that a standards engineer in his work will reduce the inventory in the stockroom or some such monetary gain. Such an approach places the standards work in the position of justifying standardization rather than the other way around. This is not a hen or egg proposition, but first things, first.

Such a line of reasoning nicely explains a rather general conclusion reached by standards engineers that some standards work can be evaluated, some cannot. Some things make a clear contribution; other things we accept in faith. It is my opinion that the latter are a part of standardization; the former, a part of standards work.

This line of thinking, with its principal aspect of separation of principle from practice, seems to me to open up new avenues of thought, not the least of which is the attitude of persons concerned with standards—the manager and the engineer. For example, the attitude of evaluation without perspective is looking inward—introversion—substituting thinking for action, analysis for conviction, and reason for faith. Perhaps, this should be controlled to give freer rein to extrovert notions of having new experiences, acting while thoughts are fresh, facing the world of reality, and gaining in the process.

• The first Congress of French Company Standards Engineers was held in Paris, France, May 5 and 6, under the general chairmanship of Engineer General Pierre O. Salmon. General Salmon is Commissioner for Standardization in the French Ministry of Industrial Production. Two sessions on standardization in French companies were under the chairmanship of J. Birle, General Director of AFNOR, the French National Standards Association, and R. Boisde, Professor at the National Conservatory of Arts and Trades.

Economic Policy and Standardization was the theme of the second part of the Congress. Paul Ribeyre, at that time Minister of Industry and Commerce, was chairman. An important feature was a paper by Albert Caquot, member of the Institute of France and president of AFNOR. Following Mr Caquot's talk, General Salmon spoke on the status of standardization, the European common market, the strength and weakness of French standardized products abroad, and the work of the International Organization for Standardization.

• "More Standards for More Profits" was the theme for the 31st Annual Meeting of the Canadian Standards Association. The meeting was held at the Fort Garry Hotel, Winnipeg, at 10 A.M. on Friday, May 30, 1958.

Walter R. McLachlan, executive vice-president, Administration and Co-ordination, A. V. Roe Canada Limited, was the guest speaker at the luncheon. His subject was "Canadian Unity through Standardization."

The CSA has completed its thirty-ninth year of service to Canada as the nation's clearinghouse for voluntary standards.

• Reference ballast impedances for new lamp types, not contained in the previous version approved in 1956, have been added in a revision of American Standard Specification for Fluorescent Lamp Reference Ballasts, now identified as C82.3-1957.

This standard is intended to include all pertinent factors of reference ballast construction and performance needed to assure accurate and reproducible results when testing either lamps or ballasts. Specifications are given for the reference ballast needed for each size of lamp.

American Standard C82.3-1957 is intended for use in conjunction with the C78 series of American Standard Dimensional and Electrical Characteristics of Electric Discharge Lamps (Fluorescent); American Standard Specifications for Fluorescent Lamp Ballasts, C82.1-1958; and Proposed American Standard Method of Measurement of Fluorescent Lamp Ballasts, C82.2.

Copies of American Standard C82.3-1957 are available at 35 cents each.

• The committee that is developing international recommendations for safe electrical installations on ships (see article page 65, MAGAZINE OF STANDARDS, March 1958) held its 1958 meeting in Konstanz, Germany, June 2-6. This is the International Electrotechnical Commission's Technical Committee 18. A. R. Gatewood, American Bureau of Shipping, was the USA's chief delegate at the meeting. Other USA delegates were J. M. Apple, Department of the Navy, Bureau of Ships; Commander O. T. Estes, U. S. Coast Guard; J. D. Shuster, Bethlehem Steel Corporation; and W. N. Zippler, Gibbs & Cox, Inc.

• The failure of fabrics to perform satisfactorily is a real tragedy both to piece goods buyers and their customers, said Albert E. Johnson, Director of Trade Relations for the National Institute of Drycleaning, recently. When a fabric fails to perform satisfactorily, more than money is lost, he pointed out. Many hours of home sewing time and effort and much pride of individual accomplishment goes down the drain, too, he said.

He urged buyers of piece goods to demand compliance with standards and to favor always "those products that are specifically offered as having met the requirements of American Standard L22."

• An Oscar, presented to the Society of Motion Picture and Television Engineers during the Academy Award ceremonies, gave recognition to the importance of standardization in the art of motion pictures. The Oscar was presented by film star Bette Davis to Barton Kreuzer, of the Radio Corporation of America, president of the Society, who accepted the award in the name of the Society's members. The ceremony was not seen by the television-viewing audience because of limited air time.

The citation included with the Oscar read: "To the Society of Motion Picture and Television Engineers for 40 years of continuing effort in standardization of engineering of motion pictures and dissemination of information to the film industry."

SMPTE sponsors project PH22 on Motion Pictures, through which standards for motion picture film, cameras, projectors, and other equipment are recommended to the American Standards Association for approval as American Standard.

HAROLD M. JALONACK, member of Sectional Committee C57, reviewed the Proposed American Standard Secondary Network Transformers, C57. 12, Section 40, in the April 1958 issue of "Transmission and Distribution."

The Proposed Standard was developed by the Joint Committee of the Edison Electric Institute and the National Electrical Manufacturers Association, and was distributed as Proposed American Standard in December 1957. It represents the results of eight years of careful study by the committee.

"Although many difficult questions were resolved," Mr Jalonack points out, "not every problem involved in the standardization of secondary network transformers has yet been solved. The remaining areas are being studied actively and suitable revisions and supplements will take place as soon as appropriate decisions have been reached.

"In the interim, the Proposed American Standard and its exact counterpart, the First Report of the EEI-NEMA Joint Committee, represent the best available source of assistance to users in selecting a product well tailored to secondary network requirements and to manufacturers in facilitating their production," Mr Jalonack explains.

In his article Mr Jalonack answers a series of questions on the importance and value of the standard and explains various basic types specified therein as well as the kva and voltage ratings covered by the standard.

AMERICAN STANDARDS UNDER WAY

Status as of May 19, 1958

Legend — *Standards Council* — Approval by Standards Council is final approval as American Standard; usually requires 4 weeks. *Board of Review*— Acts for Standards Council and gives final approval as American Standard; action usually requires 2 weeks. *Standards Board* — Approves standards to send to Standards Council or Board of Review for final action; approval by standards boards usually takes 4 weeks.

Note — Send check when ordering standards listed as published to avoid service charge for handling.

BUILDING AND CONSTRUCTION

In Standards Board

Fire Tests of Door Assemblies, Methods of, ASTM E 152-56T; ASA A2.2- (Revision of ASTM E 152-55T; NFPA 252; ASA A2.2-1956)
Sponsors: National Bureau of Standards; National Fire Protection Association; American Society for Testing Materials

CHEMICAL INDUSTRY

In Board of Review

Trisodium Phosphate, Specification for, ASTM D 538-57; ASA K60.12- (Revision of ASTM D 538-55T; ASA K60.12-1956)
Sponsor: American Society for Testing Materials

Standard Submitted

Common Name for 2-diphenylacetyl 1-1,3-indandione (diphacinone), K62.13-
Sponsor: U. S. Department of Agriculture

DRAWINGS, SYMBOLS, AND ABBREVIATIONS

In Standards Board

Letter Symbols for Hydraulics, Y10.2- (Revision of Z10.2-1942)
Sponsor: American Society of Mechanical Engineers

American Drafting Standards Manual, Section 11, Plastics, Y14.11- (Partial revision of Z14.1-1946)
Sponsors: American Society of Mechanical Engineers; American Society for Engineering Education

ELECTRIC AND ELECTRONIC

In Board of Review

Fluorescent Lamp Ballasts, Methods of Measurement of, C82.2-
Sponsor: Electrical Standards Board

Residential Wiring Handbook, C91.1-
Sponsor: Industry Committee on Interior Wiring Design

In Standards Board

Metallic Coverings for Insulated Wire and Cable, Specifications for, C8.15- (Revision of C8.15-1942)
Sponsor: Electrical Standards Board

Project Initiated

Coupling Capacitors, Coupling Capacitor Potential Devices, and Line Traps, C93
Sponsors: American Institute of Electrical Engineers; National Electrical Manufacturers Association
Scope: *Standards, specifications, methods of test, and definitions for coupling capacitors, coupling capacitor potential devices, and line traps for electric power lines.*

MATERIALS HANDLING

In Board of Review

55-Gallon Tight Head Universal Drum, ICC-17E, MH2.1-

55-Gallon Full Open Head Universal Drum, MH2.2-

55-Gallon Tight Head Universal Drum, ICC-5B, MH2.3-

55-Gallon Tight Head Universal Drum, ICC-17C, MH2.4-

55-Gallon Full Open Head Universal Drum, ICC-17H, MH2.5-

30-Gallon Tight Head Universal Drum, ICC-17E, MH2.6-

16-Gallon Tight Head Universal Drum, MH2.7-

16-Gallon Full Open Head Lug Cover Universal Drum, MH2.8-

5-Gallon Tight Head Universal Drum, ICC-17E, MH2.9-

5-Gallon Lug Cover Universal Pail, MH2.10-
Sponsor: Packaging Institute

Project Initiated

Pictorial Marking of Handling Instructions for Non-Dangerous Goods, MH6
Sponsor: Society of Industrial Packaging and Materials Handling Engineers
Scope: *To prepare coordinated recommendations for the pictorial markings applied to packages of non-dangerous goods to indicate special handling instructions.*

MECHANICAL

In Board of Review

Evaluating Static and Dynamic Load Ratings for Ball and Roller Bearings, Method of, B3.11-
Sponsor: Mechanical Standards Board

In Standards Board

Slotted and Recessed Head Tapping Screws and Metallic Drive Screws, B18.6.4- (Revision of B18.6-1947)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Reaffirmation Approved

High-Strength High-Temperature Internal Wrenching Bolts, B18.8-1950 (R 1958)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Standard Submitted

Plain Washers, B27.2- (Revision of B27.2-1953)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

MINING

American Standards Withdrawn

Coal Mine Transportation, Safety Code for, M15-1931

Underground Transportation in Metal Mines, M18-1928
Sponsor: American Mining Congress

Withdrawal Being Considered

Use of Explosives in Bituminous Coal Mines, Recommended Practice for, M14-1930
Sponsor: Mine Inspectors Institute of America

PHOTOGRAPHY

American Standards Approved

Focal Lengths and Markings of 35mm Motion-Picture Projection Lenses, PH22.28-1958 (Revision of Z22.28-1946)

Dimensions for 35mm Motion-Picture Film Perforated 32mm, 2R-2994, PH22.73-1958 (Revision of PH22.73-1951)

100-Mil Magnetic Coating on 16mm Film, Perforated One Edge, PH22.87-1958 (Revision of PH22.87-1953)

Scene-Change Cueing for Printing 16mm Motion-Picture Film, PH22.89-1958

Four Magnetic Sound Records on 35mm Film, PH22.108-1958

Picture and Sound Apertures for Continuous Contact Printers for 35mm Release Prints with Photographic Sound, PH22.111-1958

Picture-Sound Separation in 16mm Magnetic Sound Projectors, PH22.112-1958
Sponsor: Society of Motion Picture and Television Engineers

In Board of Review

Curl of Photographic Film, Methods for Determining the, PH1.29-

Film in Rolls for Recording Instruments, Graphic Arts, Photo Typesetting, Portrait, X-ray and Related Use, Dimensions for, PH1.30-
Sponsor: Photographic Standards Board

Sensitometric Exposure of Daylight-Type Color Films, PH2.11-
Sponsor: Photographic Standards Board

Sulfuric Acid, Specifications for Photographic Grade, PH4.101- (Revision of Z38.8.101-1949)

Citric Acid, Monohydrate, Specifications for Photographic Grade, PH4.102- (Revision of Z38.8.102-1949)

Boric Acid, Crystalline, Specifications for Photographic Grade, PH4.103- (Revision of Z38.8.103-1949)

Hydrochloric Acid, Specifications for Photographic Grade, PH4.104- (Revision of Z38.8.104-1949)

Catechol, Specifications for Photographic Grade, PH4.131- (Revision of Z38.8.131-1948)

Formaldehyde, Specifications for Photographic Grade, 37-Percent Solution, PH4.152- (Revision of Z38.8.152-1949)

Sodium Sulfate, Anhydrous, Specifications for Photographic Grade, PH4.175- (Revision of Z38.8.175-1949)

Sodium Bisulfite, Anhydrous, Specifications for Photographic Grade, PH4.276- (Revision of Z38.8.276-1949)
Sponsor: Photographic Standards Board

In Standards Board

Photographic Flash Lamps, Method for Testing, PH2.13- (Revision of Z52.43-1944)

Special-Purpose Photographic Exposure Indexes for Short and for Long Exposure Times, PH2.14-

Diffuse Reflection Density, PH2.17-
Sponsor: Photographic Standards Board

Photographic Filter Sizes, Specification for, PH3.17-

Apertures and Related Quantities Pertaining to Photographic Lenses, Methods of Designating and Measuring, PH3.29- (Revision of Z38.4.20-1948)

Dimensions for Camera Accessory Shoes, PH3.30-

Photographic Enlargers, Methods for Testing, PH3.31- (Revision of Z38.7.6-1950)
Sponsor: Photographic Standards Board

PIPE AND FITTINGS

In Board of Review

Steel Butt-Welding Fittings, B16.9- (Revision of B16.9-1951)

Sponsors: American Society of Mechanical Engineers; Mechanical Contractors Association of America; Manufacturers Standardization Society of the Valve and Fittings Industry

Standard Submitted

Butt-Welding Ends, B16.25- (Revision of B16.25-1955)
Sponsors: Mechanical Contractors Association of America; Manufacturers Standardization Society of the Valve and Fittings Industry; American Society of Mechanical Engineers

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ACOUSTICS, VIBRATION, AND MECHANICAL SHOCK

Laboratory Measurement of Air-Borne Sound Transmission Loss of Building Floors and Walls, Practice for, Z24.19-1957 $0.50

Real-Ear Attenuation of Ear Protectors at Threshold, Method for the Measurement of, Z24.22-1957 $0.50
Sponsor: Acoustical Society of America

BUILDING AND CONSTRUCTION

Gypsum Plasters, Specifications for, ASTM C 28-57; ASA A49.3-1958 (Revision of ASTM C 28-55; ASA A49.3-1956) $0.30
Sponsor: American Society for Testing Materials

Structural Clay Non-Load-Bearing Tile, Specifications for, ASTM C 56-57; ASA A76.1-1958 (Revision of ASTM C 56-52; ASA A76.1-1953) $0.30
Sponsor: American Society for Testing Materials

Structural Clay Floor Tile, Specifications for, ASTM C 57-57; ASA A77.1-1958 (Revision of ASTM C 57-52; ASA A77.1-1953) $0.30
Sponsor: American Society for Testing Materials

Building Brick (Solid Masonry Units Made from Clay or Shale), Specifications for, ASTM C 62-57; ASA A98.1-1958 (Revision of ASTM C 62-50; ASA A98.1-1953) $0.30
Sponsor: American Society for Testing Materials

Facing Brick (Solid Masonry Units Made from Clay or Shale), Specifications for, ASTM C 216-57; ASA A99.1-1958 (Revision of ASTM C 216-50; ASA A99.1-1953) $0.30
Sponsor: American Society for Testing Materials

Inorganic Aggregates for Use in Gypsum Plaster, Specifications for, ASTM C 35-57T; ASA A107.1-1958 (Revision of ASTM C 35-54T; ASA A107.1-1956) $0.30
Sponsor: American Society for Testing Materials

Insulating Fire Brick, Classification of, ASTM C 155-57; ASA A111.22-1958 (Revision of ASTM C 155-47; ASA A111.22-1955) $0.30
Sponsor: American Society for Testing Materials

High-Strength Steel Castings for Structural Purposes, Specifications for, ASTM A 148-57; ASA G52.1-1958 (Revision of ASTM A 148-55; ASA G52.1-1956) $0.30
Sponsor: American Society for Testing Materials

DRAWINGS, SYMBOLS, AND ABBREVIATIONS

Graphical Symbols for Use on Railroad Maps and Profiles, Y32.7-1957 (Revision of Z32.2.5-1950) $1.50
Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

ELECTRIC AND ELECTRONIC

Soft Rectangular and Square Bare Copper Wire for Electrical Conductors, Specifications for, ASTM B 48-57; ASA C7.9-1958 (Revision of ASTM B 48-55; ASA C7.9-1956) $0.30

Hard-Drawn Copper Covered Steel Wire, Specifications for, ASTM B 227-57; ASA C7.17-1958 (Revision of ASTM B 227-52; ASA C7.17-1953) $0.30

Concentric-Lay-Stranded Aluminum Conductors, Hard-Drawn and Three-Quarter Hard-Drawn, Specifications for, ASTM B 231-57; ASA C7.21-1958 (Revision of ASTM B 231-55; ASA C7.21-1956) $0.30

Concentric-Lay-Stranded Aluminum Conductors, Steel-Reinforced, (ACSR) Specifications for, ASTM B 232-57; ASA C7.22-1958 (Revision of ASTM B 232-55T; ASA C7.22-1956) $0.30

Resistivity of Electrical Conductor Materials, Method of Test for, ASTM B 193-57; ASA C7.24-1958 (Revision of ASTM B 193-49; ASA C7.24-1951) $0.30

Standard Nominal Diameters and Cross-Sectional Areas of AWG Sizes of Solid Round Wires Used as Electrical Conductors, Specifications for, ASTM B 258-57; ASA C7.36-1958 (Revision of ASTM B 285-51T; ASA C7.36-1956) $0.30

Soft or Annealed Coated Copper Conductors for Use in Hookup Wire, Specifications for, ASTM B 286-57; ASA C7.39-1958 $0.30
Sponsor: American Society for Testing Materials

Rotating Electric Machinery Forming a Part of the Power Equipment on Electrically-Propelled Railway Cars, Railway Locomotives, and Coaches (Trolley and Prime Mover), C35.1-1957 (Revision of AIEE 11-1943; ASA C35.1-1943) $0.60
Sponsor: American Institute of Electrical Engineers

Piezoelectric Vibrator, Methods of Measurement and Definition of, C83.17-1958 $0.60

Fixed Wire-Wound Power Resistors, Requirements for, C83.18-1958 $0.80
Sponsor: Electronic Industries Association

Guide for Installation and Maintenance of Oil-Immersed Transformers, C57.93 (Appendix to American Standard C57.12-1956) $0.75

Guide for Installation and Maintenance of Dry-Type Transformers, C57.94 (Appendix to American Standard C57.12-1956) $0.50

MECHANICAL

Plow Bolts, B18.9-1958 (Revision of B18.9-1950) $1.50
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Mechanical Refrigeration Installations on Shipboard, Recommended Practice for, B59.1-1958 (Revision of B59.1-1950) $1.00
Sponsor: American Society of Refrigerating Engineers

Molybdenum-Steel Plates for Boilers and Other Pressure Vessels, Specifications for, ASTM A 204-57; ASA G34.1-1958 (Revision of ASTM A 204-56; ASA G34.1-1956) $0.50
Sponsor: American Society for Testing Materials

PETROLEUM PRODUCTS AND LUBRICANTS

Melting Point of Paraffin Wax, Method of Test for, ASTM D 87-57; ASA Z11.4-1957 (Revision of ASTM D 87-42; ASA Z11.4-1942) $0.30

Cloud and Pour Points, Method of Test for, ASTM D 97-57; ASA Z11.5-1957 (Revision of ASTM D 97-47; ASA Z11.5-1948) $0.30

Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, Tentative Method of Test for, ASTM D 240-57T; ASA Z11.14-1957 (Revision of ASTM D 240-50; ASA Z11.14-1950) $0.30

Existent Gum in Fuels by Jet Evaporation, Tentative Method of Test for, ASTM D 381-57T; ASA Z11.36-1957 (Revision of ASTM D 381-53T; ASA Z11.36-1953) $0.30

Kinematic Viscosity to Saybolt Furol Viscosity, Method for Conversion of, ASTM D 666-57; ASA Z11.53-1957 (Revision of ASTM D 666-53; ASA Z11.53-1953) $0.30

Oxidation Stability of Aviation Fuels (Potential Residue Method), Tentative Method of Test for, ASTM D 873-57T; ASA Z11.60-1957 (Revision of ASTM D 873-49; ASA Z11.60-1949) $0.30

Sulfated Residue from New Lubricating Oils, Tentative Method of Test for, ASTM D 874-57T; ASA Z11.68-1957 (Revision of ASTM D 874-55; ASA Z11.68-1955) $0.30

Water Tolerance of Aviation Fuels, Method of Test for, ASTM D 1094-57; ASA Z11.82-1957 (Revision of ASTM D 1094-53; ASA Z11.82-1953) $0.30

Unsaturated Light Hydrocarbons (Silver-Mercuric Nitrate Method), Method of Test for, ASTM D 1268-55; ASA Z11.97-1957 $0.30
Sponsor: American Society for Testing Materials

PIPE AND FITTINGS

Welded Wrought-Iron Pipe, Tentative Specifications for, ASTM A 72-56T; ASA B36.2-1958 (Revision of ASTM A 72-55; ASA B36.2-1956) $0.30

Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses, ASTM A 120-54; ASA B36.20-1958 (Revision of ASTM A 120-47; ASA B36.20-1951) $0.30
Sponsor: American Society for Testing Materials; American Society of Mechanical Engineers

Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service, Specifications for, ASTM A 182-57T; ASA G37.1-1958 (Revision of ASTM A 182-56T; ASA G37.1-1957) $0.30
Sponsor: American Society for Testing Materials

Forged or Rolled Steel Pipe Flanges, Forged Fittings, and Valves and Parts for General Service, Specifications for, ASTM A 181-57T; ASA G46.1-1958

(Revision of ASTM A 181-55T; ASA G46.1-1956) $0.30
Sponsor: American Society for Testing Materials

Seamless Copper Pipe, Standard Sizes, Specification for, ASTM B 42-57; ASA H26.1-1958 (Revision of ASTM B 42-55; ASA H26.1-1956) $0.50
Sponsor: American Society for Testing Materials

Seamless Red Brass Pipe, Standard Sizes, Specifications for, ASTM B 43-57; ASA H27.1-1958 (Revision of ASTM B 43-55; ASA H27.1-1956) $0.30
Sponsor: American Society for Testing Materials

TEXTILES

Snag Resistance of Hosiery, AATCC Tentative Method 65-54; ASTM D 1115-54T; ASA L14.85-1956 $0.30

Relaxation and Felting Shrinkage in Laundering of Stabilized Knit Wool Fabrics, Accelerated Test, AATCC 74-53; ASTM D 1284-53T; ASA L14.89-1956 $0.30

Methods of Sampling Cotton Fibers for Testing, ASTM D 1441-54; ASA L14.92-1957 $0.30

Method of Test for Fiber Weight per Unit Length and Maturity of Cotton Fibers (Array Method), ASTM D 1442-54; ASA L14.93-1957 $0.30

Method of Test for Cross-Sectional Characteristics of Cotton Fibers, ASTM D 1444-56; ASA L14.95-1957 $0.30

Method of Test for Strength of Cotton Fibers (Flat Bundle Method), ASTM D 1445-53T; ASA L14.96-1957 $0.30

Method of Test for Number of Neps in Cotton Fibers, ASTM D 1446-53T; ASA L14.97-1957 $0.30

Method of Test for Length of Cotton Fibers by Fibrograph, ASTM D 1447-54T; ASA L14.98-1957 $0.30

Method of Test for Fineness of Cotton Fibers by Micronaire, ASTM D 1448-56; ASA L14.99-1957 $0.30

Method for Determining the Specific Area and Immaturity Ratio of Cotton Fibers (Arealometer Method), ASTM D 1449-55T; ASA L14.100-1957 $0.30

Method of Test for Maturity of Cotton Fibers (Polarized - Light Method), ASTM D 1450-55T; ASA L14.101-1957 $0.30

Method of Test for Resistance to Yarn Slippage in Silk, Rayon and Acetate Woven Fabrics, ASTM D 434-42; ASA L14.102-1957 $0.30

Method of Test for Yarn Distortion in Woven Fabrics, ASTM D 1336-54T; ASA L14.103-1957 $0.30
Sponsors: American Society of Textile Chemists and Colorists; American Society for Testing Materials

WHAT'S NEW ON AMERICAN STANDARDS PROJECTS

Code for Pressure Piping, B31—
Sponsor: American Society of Mechanical Engineers

An error in the reference to Monel in Tables 2 and 3 of Case 30 (page 122, April issue, MAG OF STDS) has been noted. In place of Monel 66 Ni-29 Cr, Al, the reference in both tables should read Monel 66 Ni-29 Cu, Al.

Approval Requirements for Gas-Burning Appliances, Z21—
Sponsor: American Gas Association

At its meeting March 27, the committee decided to study a request for approval requirements specifically for appliances installed in mobile homes and trailer coaches. A request for such standards had been received from the Trailer Coach Association. It was pointed out that a number of states are considering development of codes that would require these appliances to be approved specifically for such use by a nationally recognized testing agency. The working group named at the meeting will bring this problem to the attention of the various appliance subcommittees.

It was also decided to approve requirements that clothes dryers be equipped with a three-conductor grounding cord and attachment plug cap. According to the committee's action, this requirement would apply to all clothes dryers produced after July 1, 1959. This is in line with an agreement reached by the Engineering Committee of the American Home Laundry Manufacturers Association for application to all home laundry equipment.

Draft approval requirements for air conditioning equipment using gas is being referred to the industry and a permanent subcommittee is to be appointed to have jurisdiction over air conditioning and cooling equipment requirements.

All subcommittees are to be authorized to prepare approval requirements specifically for appliances to be installed outdoors if the subcommittee believes such requirements are desirable for appliances under their jurisdiction.

Standardization in the Field of Library Work and Documentation, Z39—
Sponsor: Council of National Library Associations

Robert E. Kingery, chief of the Preparation Division, New York Public Library, has been elected chairman of Sectional Committee Z39. Mr Kingery has served as secretary of the committee since 1952. He succeeds Laurence Leavey, Librarian, St Vincent College Library, as chairman.

Other officers elected at the meeting are Mrs Anne J. Richter, book editor and director, R. R. Bowker Company, New York, vice-chairman, and Harold Oatfield, head of the literature research group, Charles Pfizer & Company, Brooklyn, secretary.

A number of subcommittees have been organized and chairmen appointed. These are:

Abbreviations for Periodicals — Harold Oatfield, Chief, Literature Research Group, Charles Pfizer & Company, Brooklyn, N. Y. (American Documentation Institute)

Bibliographical References — Laurence Leavey, St Vincent College Library, Latrobe, Pennsylvania (Catholic Libraries Association)

Indexing—Anne J. Richter, Book Editor and Director, R. R. Bowker Company, New York, N. Y. (Special Libraries Association)

Proof Correction Signs — Dale B. Baker, Associate Editor, Chemical Abstracts, Columbus, Ohio (American Chemical Society)

Reference Data for Periodicals— Ivan A. Given, Associate Editor, *Coal Age*, McGraw-Hill Publishing Company, New York (Associated Business Publications)

Statistics for Libraries — Henry J. Dubester, Chief, General Reference and Bibliographic Division, Library of Congress, Washington,

D. C., and Miss M. Bonniwell, Department of the Navy, Bureau of Ships, Washington, D. C., co-chairmen.

Photo—Felix Ramirez

Robert E. Kingery

Transliteration — C. Sumner Spalding, Chief, Descriptive Cataloging Division, Library of Congress, Washington, D. C.

These subcommittee chairmen also operate as an international subcommittee to express USA views on work of the International Organization for Standardization's Technical Committee 46 on Documentation.

Sectional Committee Z39 has had before it for consideration a draft standard prepared by its Subcommittee on Indexing. Membership of the subcommittee includes individuals and organizations known both nationally and internationally for their work with indexes. These include the H. W. Wilson Company, the New York Times Index, the Encyclopedia Americana, the Encyclopedia Britannica, the Library of Congress, the New York Public Library, and many others.

Anne J. Richter

Comments received, however, indicated to some members of Committee Z39 that the draft should be studied to determine whether it can be adapted to problems that may arise in the use of machines for retrieval of information. The draft was referred back to the subcommittee for consideration of this question.

A feature of the committee's recent Spring meeting was a talk by Verner Clapp, director of the Council of Library Resources. Mr Clapp described the work his organization is doing, and the grant that has been made to the American Library Association for a study of paper tests and standards. John H. Ottemiller, Yale University Library, ALA representative on Committee Z39, is in charge of this project.

Another committee of the American Standards Association, Sectional Committee PH5 on Photographic Reproduction of Documents, is working on materials and equipment of great interest to members of Sectional Committee Z39. Ralph H. Carruthers, Photographic Division, New York Public Library, acts as liaison between Committee Z39 and Committee PH5. He reported to Committee Z39 at its Spring meeting that Committee PH5 is working on test methods for microfilm and microfilm readers. He also called attention to publication of an American Standard that outlines standard practices for the safe storage of microfilm to prevent its deterioration during storage.

Harold Oatfield

The new officers bring to the work of Committee Z39 wide experience in library work and publishing.

Mr Kingery is a graduate of Wittenberg College and of the Library School of Columbia University. In addition to his responsibilities as chief of the Preparation Division of the New York Public Library, he is currently chief bibliographer and educational adviser for Collier's Encyclopedia as well as bibliographer for the New Standard Encyclopedia. He is also a lecturer at Pratt Institute and an instructor at the Ballard School. His writings include the *How-to-Do-It Books, A Selected Guide,* 1954, and *Careers in Library Service,* 1953. He is a member of the New York Library Club, New York Library Association, American Library Association, Bibliographical Society of America, Special Libraries Association, and New York Personnel Management Association.

Mrs Richter was chosen as the 1957 outstanding bookwoman by the Women's National Book Association. She is a member of the Board of Managers of the Booksellers League and is chairman of a course in modern books and publishing given by the Women's National Book Association in cooperation with the Bureau of Libraries, New York City Board of Education. She has been instrumental in developing the publishing reference books *The Literary Market Place, The American Book Trade Directory,* and the *American School Libraries Directory.*

Dr Oatfield took his Master of Science degree at Iowa State University in organic chemistry. He is well known for his contributions to professional publications both in the chemical and library fields. He is author of a chapter in Jackson's *Technical Libraries* on "Documentation of Current Literature." He also edited the National Research Council's *Symposium on Burns.* He is currently chairman of the Bibliography Committee of the Medical Libraries Association. Dr Oatfield is a member of the American Chemical Society, the American Association for the Advancement of Science, the American Documentation Institute, the Medical Library Association, the Friends of the National Library of Medicine, and the Society of Technical Writers and Editors. He has been literature research chemist and head of the literature research group at Charles Pfizer & Company since 1951.

The scope of work of Sectional Committee Z39 has been defined as covering "Standards for concepts, definitions, terminology, letters and signs, practices, methods, supplies, and equipment used in the field of library work and the preparation and utilization of documents."

by **Cyril Ainsworth**

DINNSA

(Does Industry Need a National Standards Agency?)

Mr Ainsworth has served for many years as Technical Director of the American Standards Association. He is now Deputy Managing Director and Assistant Secretary.

WHEN ASA was organized in 1918 as the American Engineering Standards Committee, it was a federation of five engineering societies and three departments of the Federal Government. Today it is a federation of 116 technical societies and trade associations. This growth indicates that both industry and technology believe in and desire to assist in attainment of the objectives of the association as presented in its constitution. It also indicates a belief in the essentiality of ASA as the national standards body.

What is there about ASA that has developed this confidence and acceptance of the service it was organized to render? Only a careful analysis of the objectives and principles of the federation can provide the answer to this question. The answer has many parts.

The objectives as stated in ASA's constitution provide the first clue as to why the leading technical societies and trade associations believe that an organization such as ASA is essential to the advancement of the national economy. The first of these is, "To provide systematic means by which organizations concerned with standardization work may cooperate in establishing American Standards, to the end that duplication of work and the promulgation of conflicting standards may be avoided."

Hundreds of organizations—trade associations, technical societies, individual companies, and governmental bodies—develop standards. While much of this work is intended for internal use only, there is an increasing consciousness of the inter-relationship of this standardization work; hence, the need for some means whereby groups can cooperate in standardization work and coordinate their views in regard to standards on subjects of common interest. ASA Procedures, which the members of ASA have built, are the rules for the operation of the systematic means referred to in the constitutional quotation cited above.

The nuclear energy standardization program organized under ASA procedure provides an excellent example of the coordinating functions of ASA. The Nuclear Standards Board operates as the correlating committee for the complete program. Its membership consists of representatives of 34 national organizations, including industry, labor, technology, insurance, government, and public service groups. Six sectional committees report their activities to the board. The membership of these committees varies from 16 national groups to 40. There is overlapping in the membership of these committees, of course, but the great necessity for the existence of a piece of machinery which can operate to bring together such a vast array of fundamentally concerned groups represented in this complete program is clearly indicated. ASA machinery has operated so that these groups can cooperate under neutral auspices and with equal opportunity of participation in the development of standards which they all desire. Through this operation of the machinery duplication of work and the promulgation of conflicting standards are avoided.

While the members of ASA have built and are maintaining ASA as the systematic means for cooperation and coordination, it will be noted that they did not do this exclusively for themselves. They intended that ASA be used by all organizations, member or not, for cooperation in the development of standards which they need. Therefore, through the provisions of the constitution, all organizations are invited to use ASA as a means through which they can cooperate with one another with equality of standing and interest.

Within the framework of the objective for which the members have banded themselves together, ASA is engaged in standards development work only to the extent of providing the means whereby industry, technology, and government may avoid the waste caused by duplication of effort and the confusion that results from promulgation of conflicting standards. By the elimination of waste and confusion, there is made available, not by ASA as a standards-developing organization, but by the groups concerned, standards having such a high degree of acceptance as to indicate a national acceptance, thereby permitting the ASA to designate the standards "American Standard."

Through the vision of its members, ASA renders a public service rather than a membership service. The members of ASA are in the forefront in standardization work. They understand and believe in the value of cooperation and coordination at the national level. Through the words of the ASA constitution, they invite all organizations to join with them in maintaining and operating ASA.

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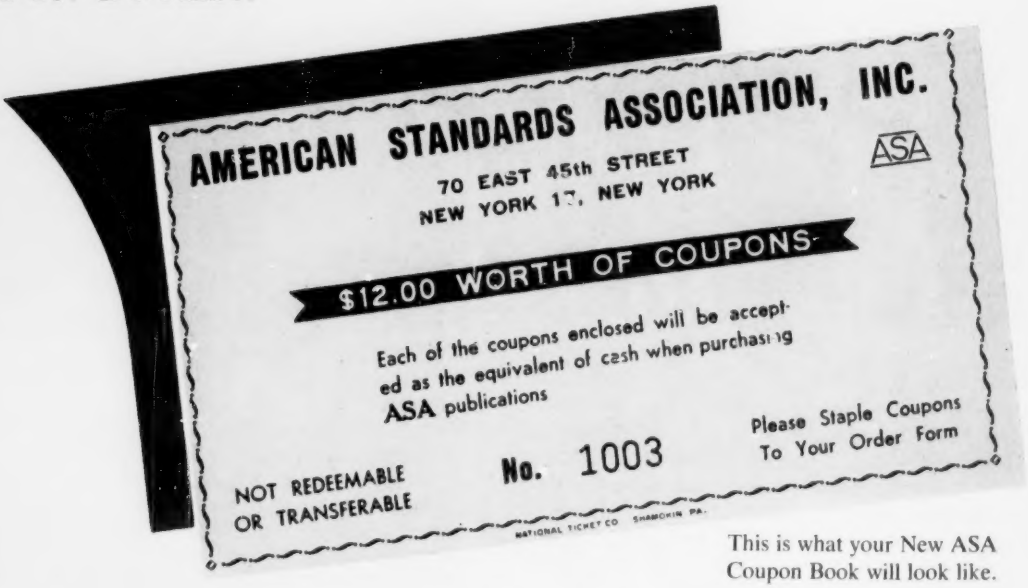
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